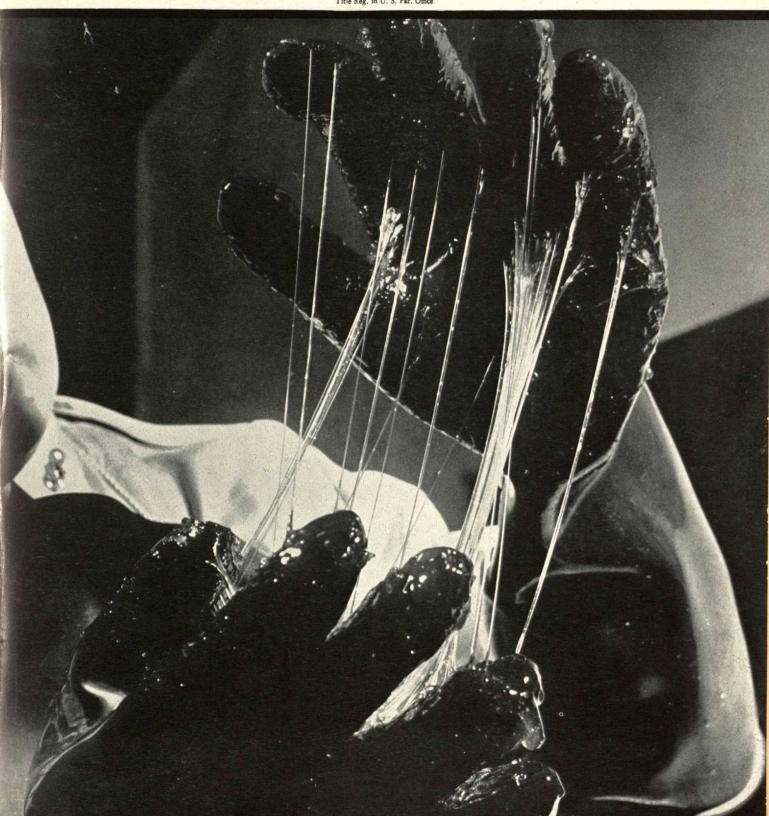
December 1945

TECHNOLOGY REVIEW



technology review

Published by MIT

This PDF is for your personal, non-commercial use only.

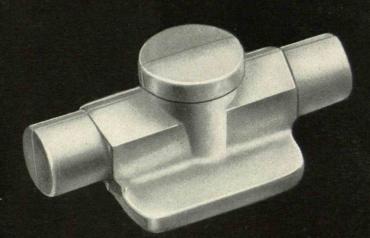
Distribution and use of this material are governed by copyright law.

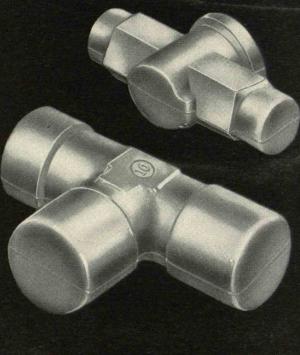
For non-personal use, or to order multiple copies please email permissions@technologyreview.com.





VALVE BODIES-FITTINGS OF NON-FERROUS METALS





HARVEY

METAL CORPORATION

HAROLD B. HARVEY '05 . Engineers & Manufacturers . SHERRY O'BRIEN '17

74th STREET and ASHLAND AVENUE . CHICAGO 36, ILLINOIS

FORGINGS IN ALLIMINUM . BRASS . BRONZE . COPPER . MAGNESIUM . MONEL . ALLOYS

MACHINING FACILITIE





Average cost of compensation and medical treatment for accidents according to insurance company figures.

American Optical

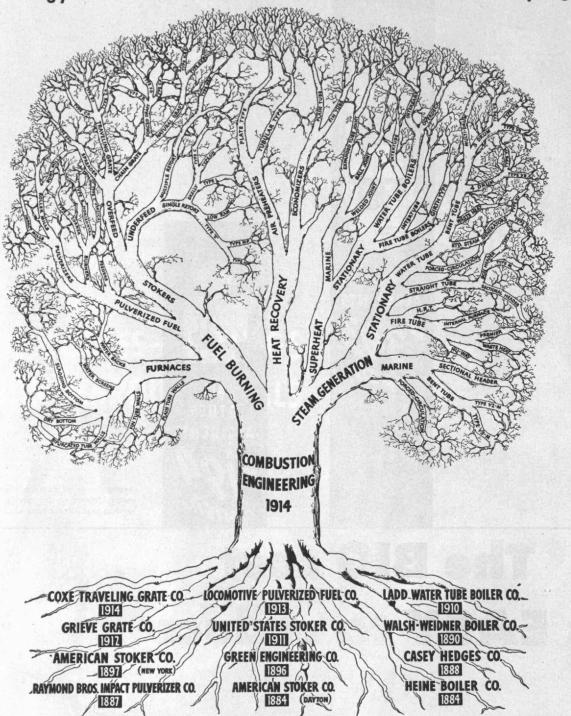
SOUTHBRIDGE, MASSACHUSETTS



INDUSTRY

OF

A genealogy that has contributed much to industrial progress



THIS family tree tells a story typical of many large American companies whose antecedents were the trail blazers of present-day industry. Through the bringing together of the diverse yet related experiences of these pioneers, knowledge has been at once broadened and coordinated with a consequent acceleration of progress . . . Thus in the related fields of fuel burning and steam generation, which are the very roots of our industrial

economy, the past 25 years has been a period of revolutionary progress in which Combustion Engineering has played a leading role . . . Thus has one company, building on the assimilated experiences of pioneers in every branch of its field, been able to provide new and better equipment in the variety of designs required for the widely differing fuels and steam needs of all industry — from small industrial plants to the largest power stations. A-900

RECONVERT NORTON

GRINDING WHEELS WHERE YOU NEED THEM



FACTORY STOCK inousands of square feet of stock rooms at the Worcester fadory containing over 18,000 different abrasive items.

Well-stocked warehouses in five industrial center Well-stocked warenouses in tive inquisital centers.
Chicago, Detroit, Cleveland, Pittsburgh and Philadelphia.

And in Types and Sizes for Every Grinding Job

RECONVERSION may bring you new grinding problems, but you can be sure of finding the right wheels to solve them in the Norton line and stocked handy to you.

There are wheels in several varieties of Alundum abrasive (including the 57 Alundum) for grinding steels and steel alloys; new record-breaking wheels of Crystolon abrasive for cast iron, brass, and the light metals; and Norton diamond wheels for the carbides, glass, porcelain, and other unusual jobs. Bonds include B-E vitrified, resinoid, rubber, shellac, and silicate. And of course there's the patented Norton Controlled Structure process of manufacture.

Reconverting with Norton assures you the right wheel for each new grinding job and the engineering "know-how to select them for you.

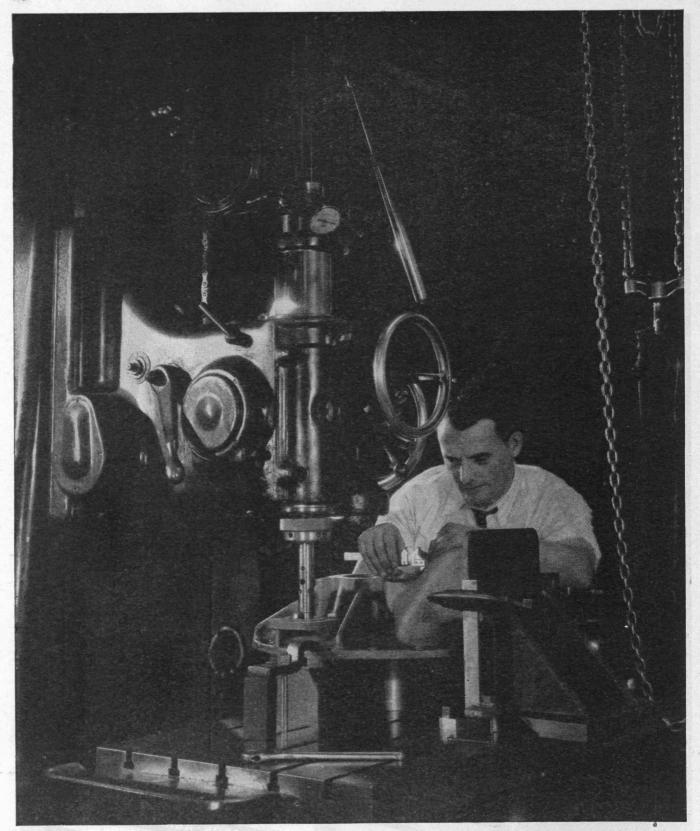
NORTON COMPANY, Worcester 6, Mass. Behr-Manning, Troy, N. Y. is a Norton Division

NORTON ABRASIVES

DISTRIBUTOR STOCKS

Over 200 distributors in 184 cities with stocks selected

to meet local needs.



T-P means Top Precision in all phases of design, development, tooling, and contract manufacturing. Here, in the Taft-Peirce Contract Division, is available virtually every type of machine tool, every element of personal skill and experience, which could be required on mechanical production problems by any manufacturer in any field of industry. If you need only a single tool or part, Taft-Peirce Contract Service will readily supply it. If you need complete mechanisms or machines in quantity lots, Taft-Peirce Contract Service will meet *your* production schedules and the most critical probing of *your* own inspectors. If you would like to see exactly *how*, write to The Taft-Peirce Mfg. Co., Woonsocket, Rhode Island, for the illustrated brochure entitled:

Take it to Taft-Peirce

for Eimac's



FOR EIMAC TETRODES 4-125-A, 4-250-A AND OTHERS

The HX-100 is a husky low-loss socket that will handle any tube using the "Giant" 5-pin base, including the Eimac A-125-A and the Eimac

4-250-A. The HX-100 is of the wafer type with a low-loss ceramic body. Contacts are of the heavy duty type with auxiliary springs to provide ample contact pressure. In every de-

tail, HX-100 is designed to contribute top per-

formance through a long, trouble-free life.

Deliveries to dealers will begin about the time this issue

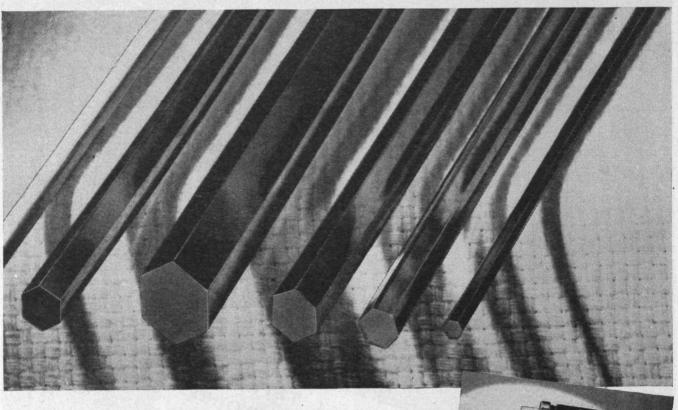
HX-100 Socket List Price, \$3.30.

HX-1005 Socket with three stand-off insulators, List Price, \$4.25.

NATIONAL COMPANY, INC. MALDEN, MASS., U.S.A.



Sandee HEXAGONAL PLASTIC ROD



Preferred for an Ever-Increasing Number of Important Industrial Applications

One of the newer users of Sandee Hexagonal Extruded Plastic Rod is Elgin National Watch Co. Their highly accurate Test Plug Gauges, are made with handles of Sandee red translucent Cellulose Acetate Butyrate extruded plastic rod. As in screw driver handles, the hex shape keeps the tool from rolling on a flat surface. This tough non-magnetic material made in standard sizes up to 1 inch, is readily machined. in this case, drilled and threaded and slotted to receive a split threaded bushing with a locking nut. Hex rod is only one of the many fine extruded plastic products we make. The Sandee catalog, describing our complete service, embracing Rigid and Flexible Plastic Extrusions, is yours for the asking.



Elmer Szantay, M.E. '35 General Manager

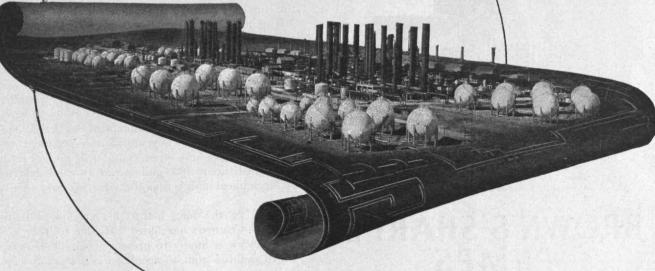
SALES REPRESENTATIVES IN 19 PRINCIPAL CITIE

Sandee Manufacturing Company

3945 NORTH WESTERN AVENUE - CHICAGO 18. ILLINOIS

EXTRUDED PLASTICS AND SPECIAL TOOLS





in the Petroleum Chemistry Industry

LUMMUS CHEMICAL PLANT EXPERIENCE

ALCOHOL DISTILLERIES

ANHYDROUS ALCOHOL UNITS

SYNTHETIC PHENOL PLANTS

PHTHALIC ANHYDRIDE PLANTS

ETHYLENE AND PROPYLENE PRODUCTION

SOLVENT RECOVERY PLANTS

FORMALDEHYDE PRODUCTION

BUTANOL FERMENTATION PROJECTS

STYRENE PLANTS

BUTADIENE PLANTS

AZEOTROPIC AND EXTRACTIVE DISTILLATION

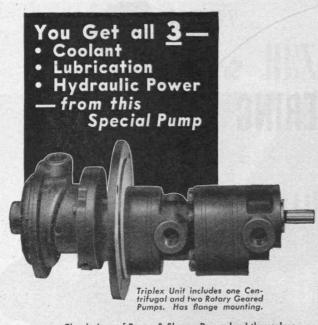
Petroleum has become a cheap source material for the manufacture of many chemical products . . . such as styrene, butadiene, phenol, toluol, alcohols, acetic acid, ketones, esters, resins, plastics and solvents. And new large scale manufacturing techniques have added the further advantage of lower chemical production costs — costs that are immediately reflected in competitive consumer products. As a result, the petroleum chemistry field is on the threshold of still greater expansion. Excellent opportunities await progressive chemical manufacturers and refiners.

Lummus has pioneered in the development, construction and initial operation of chemical plants, petroleum refineries and petroleum chemical plants. Its engineering services are now available for the further development of projects for the production of chemical raw materials from petroleum sources . . . and the development of process units for the manufacture of specific chemicals.

For further information write to: The Lummus Company, 420 Lexington Avenue, New York 17; 600 South Michigan Avenue, Chicago 5; Mellie Esperson Building, Houston 2, Texas; 634 South Spring Street, Los Angeles 14; In England: 78 Mount Street, London, W.1.

LUMMUS

COMPLETE CHEMICAL PLANTS



B·S

The designs of Brown & Sharpe Pumps lend themselves to special combinations and mountings. Geared, Vane, Centrifugal and Motor Driven styles. Catalog on request. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

BROWN & SHARPE PUMPS

WANTED ASSISTANT SALES MANAGER

By Prominent Manufacturer of Centrifugal Pumps

We are a small closely owned corporation headed by a Tech man. Our location is in a midwestern community of 60,000 which is close to a large city. We employ approximately 300 in one of the finest and most modern plants in the centrifugal pump business.

We believe we have an excellent opportunity for an aggressive young man with the spark and administrative ability necessary to run a wide-awake sales organization.

Reply to Box F

THE TECHNOLOGY REVIEW Cambridge 39, Mass.

THE TABULAR VIEW

Pioneers. — Among the earliest efforts in airplane instrumentation are the tests of the late Professor Alfred V. de Forest and Captain Luis de Florez, who received their degrees in 1912 but affiliated with the Class of 1911. Working together on their undergraduate thesis, "Tests on a Burgess-Wright Aeroplane," these two young men made what is believed to be the first measurements of

the thrust of an airplane propeller in flight.

The importance of their 1912 undergraduate thesis is reviewed (page 96) by Professor Jerome C. Hunsaker, '12, himself a noted pioneer in aviation, as attested by the award made to him in 1933 of the Daniel Guggenheim Medal for achievement in aeronautics and by the title of his doctoral thesis, "Dynamic Stability of Aeroplanes." After spending 18 years as an officer in the Navy, two years as vice-president of the Bell Telephone Laboratories, and five years as vice-president of the Goodyear-Zeppelin Corporation, Dr. Hunsaker returned to the Institute in 1933 and now heads the Departments of Mechanical and Aeronautical Engineering.

Survey. To the long list of his articles, PRESIDENT KARL T. COMPTON has added "Mission to Tokyo," and The Review is happy to present (page 99) this report, which resulted from his active participation in scientific

projects aimed to win the peace.

Granted six months' leave of absence to direct the activities of several hundred scientists in the Pacific in the war against Japan, President Compton left Cambridge for Manila late in July. Six days after he reached Manila and began organizing this scientific staff, the Japanese had negotiated for surrender. Instead of being free to return to the Institute, Dr. Compton was confronted with a new and unexpected assignment in which the war research projects and scientific resources of Japan were to be surveyed as quickly as possible as one phase of the early occupation of the Japanese islands.

(Concluded on page 90)



Will you have to alter or enlarge your plant? ... Our organization is known for its ability to build with maximum speed and minimum interruption to plant operations.

W. J. BARNEY CORPORATION
101 PARK AVENUE, NEW YORK
INDUSTRIAL CONSTRUCTION

Alfred T. Glassett, '20, Vice President



CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS



MOLYBDIC OXIDE, BRIQUETTED OR CANNED & FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

Climax Molybdenum Company 500 Fifth Avenue · New York City



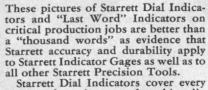




12 10

Whorever Dial Indicators Are Indicated

Make 'Em STARRETTS



Starrett Dial Indicators cover every range and requirement of machine, jig and fixture application and of inspection work. Easy to read, sturdily constructed for lasting accuracy, your workers and inspectors welcome any Indicator that has the Starrett name on the dial.

Let us mail you Starrett Dial Indicator Catalog "L."



Now, with 4 Service Stars

THE L. S. STARRETT CO., ATHOL, MASS., U. S. A. WORLD'S GREATEST TOOLMAKERS

STARRETT

PRECISION TOOLS . DIAL INDICATORS . GROUND FLAT STOCK HACKSAWS . METAL CUTTING BANDSAWS . STEEL TAPES

A I R C R A F T E N G I N E E R S

After the war, the Beech Aircraft Corporation will keep the same reputation for designing and building outstanding airplanes as it has had before and during the war. In accomplishing this, we offer the opportunity for permanent positions in an expanding organization to men with experience and above average ability on drafting, minor and major layout work, and stress analysis. In applying send complete information on education and experience to:

Engineering Department

BEECH AIRCRAFT CORPORATION
Wichita 1, Kansas

THE TABULAR VIEW

(Concluded from page 88)

Acquisition. — Significant work carried on at the Development Laboratory of the Chemical Warfare Service between 1942 and 1945 is ably recorded (page 103) by FREDERICK W. HOLT, JR., '30, who, as an Army captain, was engaged in development projects at the laboratory until the spring of this year when he became public relations officer. Mr. Holt has recently returned to civilian life, and he is now engaged in chemical research at the Institute for his company, the Brown-Bridge Mills, of Troy, Ohio, where he is technical director.

Practicality. — Having observed scientists at work during the war, Professor Philip M. Morse, of the Institute's Department of Physics, explodes (page 107) the popular misconception that men of science, particularly those in academic pursuits, are completely out of touch with practical problems. Author of more than 30 scientific papers, largely in the fields of acoustics, quantum mechanics, and nuclear physics, Professor Morse also has two full-length books to his credit. These are Vibration and Sound and Quantum Mechanics, the latter of which was written in joint authorship with Edward U. Condon, formerly of Princeton University, where Professor Morse studied before coming to the Institute.



Here are valuable facts on actual applications of DRY ICE and CO₂ for every potential user of

these vital materials—summarized from a recent Liquid survey. All applications listed are in practical use... Many of the wartime functions of DRY ICE and CO₂ have peacetime counterparts—berhaps in your industry.

time counterparts—perhaps in your industry.

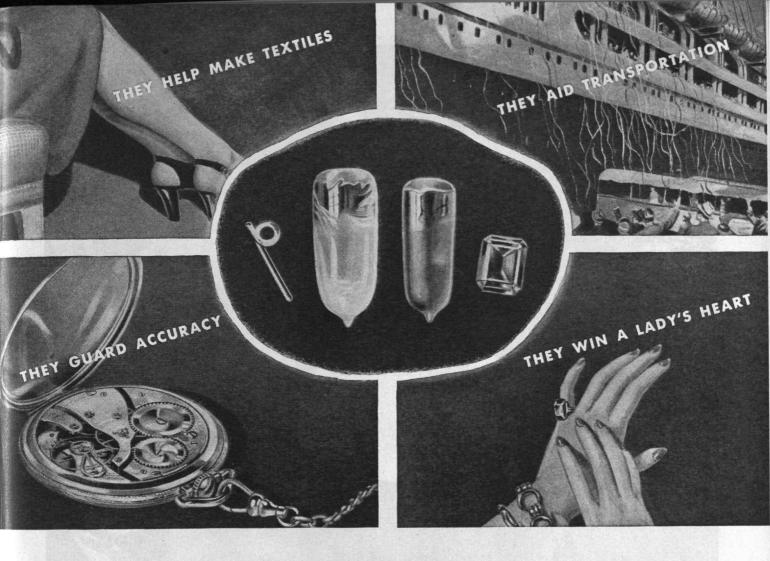
Use this chart as a check-list for possible applications to your processes or problems... DRY ICE and CO2 serve industry in many important ways including chilling lubricants, shrinking metals, packaging foods, processing oil, controlling paint quality, etc.

controlling paint quality, etc.

Ask for your copy of this free chart today . . . You'll find it belpful in many ways.

The Liquid Carbonic Corporation

3110 South Kedzie Avenue, Chicago 23, Illinois Branches in Principal Cities of the United States and Canada



... what else is in store for these Man-Made Gems?

THAT'S A GOOD QUESTION. But at this point no one can give you the complete answer to it.

The full possibilities of these man-made gems have not been explored. The making of synthetic sapphire and ruby in this country is an infant industry—born in World War II.

Prior to the war, all our synthetic sapphire and ruby were imported. When our supply of these war-vital materials was cut off, The Linde Air Products Company, a Unit of UCC,

at the request of the government condensed into months the research necessary to master the techniques of quantity production.

Of all the gems, synthetic sapphire and ruby, like their natural forms, are second only to the diamond in hardness. Already they have many uses.

They are long-wearing thread guides in

textile mills. They are the bearings in watches and delicate navigation instruments. They make phonograph needles that will far outlast metal. They are much in demand for jewelry . . . and are used for many types of cutting tools, gages, spray nozzles, burnishing wheels and insulators.

What else are they good for? If you are technically minded and read the italicized paragraph below, you may come up with a new answer or two.

In addition to extraordinary wear resistance and great beauty, LINDE synthetic sapphire and ruby are highly resistant to most chemicals and have high strength at temperatures up to 3,000 deg. F. and higher. Electrical losses at all frequencies are low. They can be given an exceptionally smooth surface, and can be bonded to other materials. Available in half-boules up to 150 carats, and in rods of 0.065 in. to 0.125 in. diameter.

For additional information send for the folder P-12 "Synthetic Sapphire Production."



LINDE SYNTHETIC GEM MATERIALS

UNION CARBIDE AND CARBON CORPORATION

30 East 42nd Street New York 17, N.Y.

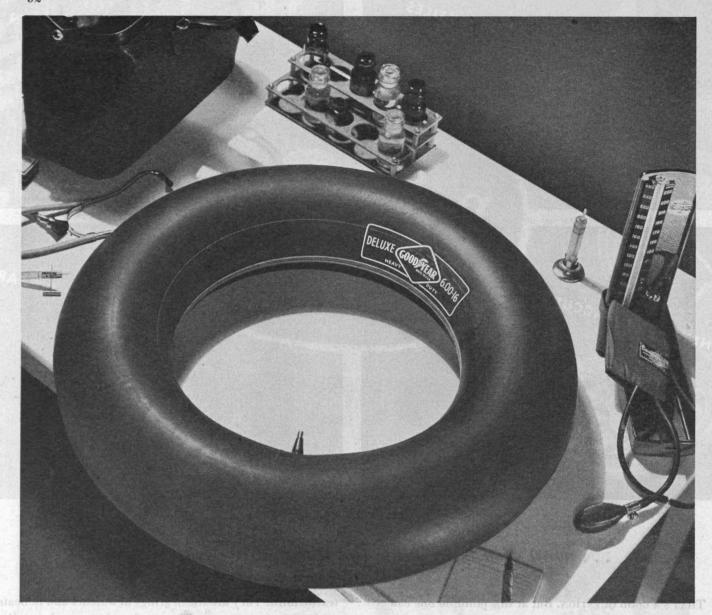
Principal Units in the United States and their Products

ALLOYS AND METALS—Electro Metallurgical Company, Haynes Stellite Company, Kemet Laboratories Company, Inc., United States Vanadium Corporation

CHEMICALS—Carbide and Carbon Chemicals Corporation

PLASTICS—Bakelite Corporation

ELECTRODES, CARBONS & BATTERIES—National Carbon Company, Inc.



Finding the cure for a tire's heart trouble

ANOTHER REASON FOR GOOD YEAR LEADERSHIP

You are looking at something you probably rarely see or think about—the inner tube of a tire. Yet it is vitally important . . . for the tube is the very heart of a tire.

When war sealed off the source of natural rubber, some tires began to develop "heart trouble." The first synthetic rubber tubes were not entirely satisfactory. Some would split and tear, come apart at the seam.

Goodyear chemists, with years of experience compounding synthetic rubber, kept plugging away, working with one formula after another. Finally, they found the elusive combination of chemicals which, together with Goodyear-developed manufacturing processes, today enables the new Goodyear synthetic rubber tube to give outstanding performance. Service records make this new tube the leader in the field.

The superiority of the new Goodyear synthetic rubber tube is the direct outgrowth of Goodyear leadership in rubber research...vision to see possibilities, experience to adopt the most promising attack and skill to interpret the results. A pioneer in rubber and the world's leading builder of tires, Goodyear also works in many other vital fields — chemicals, metals, fabrics, plastics . . . constantly finding ways of making new and better products for you.



THE GREATEST NAME IN RUBBER



Radar installation at Eastern Point Light

THE **TECHNOLOGY** REVIEW

EDITED

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CONTENTS for DECEMBER, 1945

THE COVER - JELLIED GASOLINE DEVELOPED FOR FLAME THROWERS From a Photograph by F. W. Goro for LIFE Magazine

FALL LEAVES

FRONTISPIECE 94

PROPELLER THRUST - 1912

By JEROME C. HUNSAKER

MISSION TO TOKYO

By KARL T. COMPTON 99

A Physicist Examines Some Reasons for Japan's Defeat

CHEMISTRY GOES TO THE BATTLEFIELD

BY FREDERICK W. HOLT, JR., 103

How Chemical Research Benefited Combat Troops

WHERE IS THE LONG HAIR?

By PHILIP M. MORSE 107

The Popular Myth of "Unpractical" Men of Science Is Exploded

* * *

THE TABULAR VIEW

88

Contributors and Contributions

THE TREND OF AFFAIRS

95

News of Science and Engineering

109

THE INSTITUTE GAZETTE

Relating to the Massachusetts Institute of Technology

Published monthly from November to July inclusive on the twenty-seventh of the month preceding the date of issue, at 50 cents a copy. Annual subscription, \$3.50, Canadian and foreign subscription, \$4.00. Published for the Alumni Association of the M.I.T.; A. Warren Norton, President; Alfred T. Glassett, Alf K. Berle, Vice-presidents; Charles E Locke, Secretary; Ralph T. Jope, Treasurer. Published at the Rumford Press, 10 Ferry Street, Concord, N. H. Editorial Office, Room 7-203, Massachusetts Institute of Technology, Cambridge 39, Mass. Entered as second-class mail matter at the post office at Concord, N. H. Copyright, 1945, by the Alumni Association of the Massachusetts Institute of Technology. Three weeks must be allowed to effect changes of address, for which both old and new addresses should be given.

Publisher • H. E. LOBDELL

Editor . B. DUDLEY

Business Manager • R. T. JOPE

Editorial Associates J. R. KILLIAN, JR.

WILLY LEY

P. M. Morse

PAUL COHEN F. W. NORDSIEK

J. J. ROWLANDS E. R. SCHWARZ D. O. WOODBURY

F. G. FASSETT, JR.

Editorial: THEODORA KEITH, JEAN PAGE Business: MADELINE McCormick, RUTH KING



 $F\ A\ L\ L \qquad L\ E\ A\ V\ E\ S$

THE

TECHNOLOGY REVIEW

Vol. 48, No. 2



December, 1945

The Trend of Affairs

Gold and Silver Anniversaries

NNIVERSARIES of two scientific and engineering achievements which have profoundly changed our mode of living are celebrated this month. The oldest of these is the discovery of x-rays late in 1895 by Dr. Wilhelm Konrad Roentgen, professor of physics at the University of Wurzburg in Bavaria; the second is the inauguration of regular radio broadcast programs on a practical scale by station KDKA in Pittsburgh. Radiography thus celebrates its golden anniversary and radio broadcasting can boast of 25 years of continuous service.

At the December meeting of the Wurzburg Physico-Medical Society, Roentgen modestly announced his discovery of a new and unknown type of radiation. The news of the discovery of x-rays spread rapidly, and within a short time physicists all over the world were investigating the new rays produced by Crookes tubes, one of which Roentgen was using on November 8, 1895, when he observed the effects of x-rays more or less accidentally. The tube which Roentgen used had been covered with black paper, and, in the darkened laboratory, Roentgen observed a brightly glowing screen of barium platinocyanide which lay a short distance from the tube. The glow was observed even when the screen was removed a distance of a meter or two from the tube, and it was immediately and correctly ascribed to a new and unknown type of radiation.

The discovery of x-rays came at a time when it was more or less generally believed that all the important scientific discoveries had been made and that the physicists' work in the future would be principally that of refining existing knowledge and making more precise measurements of already known phenomena. Following by eight years Hertz's discovery of the existence of electromagnetic waves (which had been predicted in 1864 by Maxwell on the basis of purely mathematical reasoning), Roentgen's discovery of the new form of radiation greatly disturbed the complacency of late Nineteenth Century scientists.

Most startling characteristic of the newly discovered radiations was their ability to penetrate objects which were opaque to ordinary light. One of the earliest radiographs made, that of Frau Roentgen's hand, with wedding ring and bones clearly visible, was an unmistakable signal to medical men that the new discovery had important applications in medicine. The applications of radiography are no longer limited to medicine, for they have grown by leaps and bounds. By making use of the differential absorption of x-rays, radiography is used for the photographic and visual diagnosis of disease or the location of broken bones or foreign particles in the human body. The same characteristics are employed in the x-ray examination of old paintings and in industrial radiography for testing homogeneity and soundness of welds and castings. The lethal effect of x-rays on abnormal cells has led to the treatment of cancer. By making use of the scattering and characteristic absorption and emission of x-rays, spectroscopy has employed x-rays for the identification of chemical elements, for examination of atomic structure, and for studies in the development of the quantum theory. In radiobiology, cells and tissues have been identified by the specific sensitivity of the cells and tissues to radiographic radiation. Fine structure of materials has been investigated in x-ray crystallography and crystal chemistry by making use of the diffractions of x-rays produced by the crystals. Truly Roentgen's "chance" observation helped to produce a world-wide revolution in thinking.

Another revolution, but of a different kind, was inaugurated 25 years ago when regular evening radio programs were initiated from station KDKA on December 1, 1920. In a certain sense, radio broadcasting, like the discovery of x-rays, may be said to be more or less accidental. Certainly it was accidental in the sense that Frank Conrad, who owned and operated station 8ZZ, the predecessor of KDKA, did not originally set out to establish a broadcasting system. He was, instead, much more interested in the accuracy of watches and other timepieces.

Mr. Conrad's interest in radio began with his desire to receive time signals transmitted by NAA at Arlington, Va., and one or two other stations providing this service shortly after World War I. Having built receiving equipment, Mr. Conrad's attention was next turned to radio transmission, and he built and operated in his own home one of the first amateur radio telephone stations in this country. Occasionally phonograph records were played for a handful of listeners who, like Conrad, had built their own amateur radio stations. The successful operation

of 8ZZ ultimately resulted in the establishment of KDKA by Mr. Conrad's company, which had been engaged in making radio apparatus during World War I.

KDKA was placed in operation on November 2, 1920, and broadcast as its first program the presidential election returns of that date. Semiweekly programs were put on from that date until December 1, when regular nightly programs were commenced. Within two years' time great activity had developed in the building of home receivers, and by 1925 the beginnings of the radio industry had already been established. The Federal Radio Commission (now the Federal Communications Commission) was organized in 1927 to bring order out of the chaos which resulted when hundreds of radio stations attempted to operate simultaneously on nearly the same frequency. Radio networks soon followed. Radio communication has grown so rapidly and soundly that we seldom realize that 15 years ago transatlantic communication by voice was still regarded with awe.

In these days of enthusiastic cacophony and soapbox operas it is pleasant to recall that a serious attempt was made in some of the earliest radio programs to provide the best music available at the time. Well-known musicians of the early Twenties performed on the air, and the Chicago Civic Opera had as a regular feature the radio transmission of their Saturday afternoon programs.

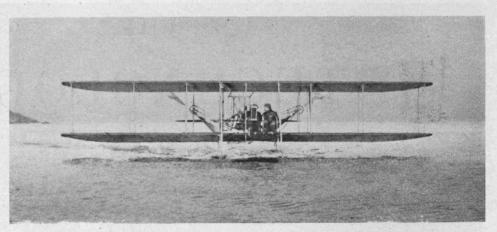
Neither Roentgen nor Conrad alone was responsible for our present use of x-rays and broadcasting, for many others have also made substantial contributions to these two fields. But their work was responsible for initiating new eras which have benefited man.

Propeller Thrust-1912

By JEROME C. HUNSAKER

PROGRESS in aviation has been so rapid that it is easy to lose sight of early developments. The unusual 1912 thesis by the late Alfred V. de Forest and his partner Luis de Florez, both graduates of the Institute Class of 1912, describes, so far as I can learn, the very first measurement of the thrust of an airplane propeller in flight. It has, however, a broader interest in that it appears to forecast very distinguished work for both De Forest and De Florez in the field of instrumentation for special engineering purposes.

¹ Professor de Forest and Captain de Florez later affiliated with the Class of 1911.



Photograph of the Burgess-Wright airplane of 1912 on which were installed the instruments for making measurements of propeller thrust. The photograph is from the thesis, "Tests on a Burgess-Wright Aeroplane," by the late Alfred V. de Forest, '11, and Luis de Florez, '11.

In their thesis, "Tests on a Burgess-Wright Aeroplane," the authors reported on the measurement of the thrust in flight of one of the twin propellers of a Wright biplane, mounted on floats and known as a Burgess-Wright. Before 1912 there had been extensive testing of airplane propellers to determine the static thrust when the airplane was held on the ground, but the thrust in flight was only estimated by a crude rule.

De Forest and De Florez undertook to design, build, calibrate, and test an apparatus to measure the thrust of the propeller and the revolutions of the engine and to record these measurements continuously on a moving

paper bearing a time record.

A very small motion of the thrust bearing was taken up against thin copper diaphragms closing the ends of a pair of oil-filled steel cups. In this manner the thrust was transmitted to the oil and thence by copper tubing to a standard 60-pound steam pressure gauge. The thrust record was made on the paper of the recorder by the brass point of a straight-line indicator motion, multiplied two to one by a small lever pivoted to the Bourdon tube of the gauge. Displacement of the record line from a base line measured the thrust.

An ingenious artifice, perhaps an invention, was provided to adjust the zero thrust reading to the base line. In addition to the tube to the pressure gauge, a short, soft metal tube was connected to the cups by which they could be filled. After having been filled, the open end of the filling tube was crushed and sealed off with solder. By still further crushing the sealed filling tube, the capacity of the oil system could be reduced and an initial pressure put upon the gauge. The distorted filling tube was referred to by interested bystanders at the time as a "dufingleoid."

The system was filled by exhausting the air with a vacuum pump, allowing oil to take its place. Calibration of the scale of the thrust indication was accomplished by a spring balance and turnbuckle. Friction was eliminated by jarring the airplane to simulate conditions with engine running. The spring balance was calibrated at the M.I.T. mechanical laboratories on Trinity Place. The authors reported that they could read the record to within 1 per cent.

Revolutions were counted by driving the paper of the recording drum from the engine by means of a flexible shaft and suitable gearing. Half seconds were recorded on the same paper by an electromagnet and contact clock.

Speed was computed from elapsed flying time over a chosen course.

The airplane was underpowered or overloaded by the floats and could stay in the air only when the engine ran full out, and it could get into the air only on a calm day.

A trial course was laid out between Marblehead Harbor and Bowditch Ledge Beacon in Salem Bay. After a long wait, ideal conditions were had at sunrise on May 1. W. Starling Burgess, who owned the plane and took a sporting interest in the project, flew the plane, with De Forest as passenger to look after the recording apparatus. De Forest was chosen for the trials because he weighed less than De Florez.

The record from these trials, besides being the first of the kind ever made, so far as I know, is of interest in showing the extremely modest performance of one of the best airplanes of 1912. The tests gave the following typical results for one propeller:

	Speed	Engine	Propeller	Thrust
Run	M.P.H.	R.P.M.	R.P.M.	Lbs.
Outward	41.5	1414	457.5	123.5
. Inward	41.7	1499	485	127.5

The Wright airplane of the day had a single engine, driving two slow propellers by means of chains and sprockets. Consequently, the total propeller disk area was extremely large in proportion to the thrust delivered, and propeller efficiency was perhaps as great as 80 per cent.

The De Forest and De Florez measurement of 125.5 pounds thrust for each propeller at an airplane speed of 41.6 miles per hour corresponds to a total of about 28 thrust horsepower. For 80 per cent propeller efficiency and 95 per cent efficiency for the chain drive, the engine should have delivered about 35 brake horsepower. It is understood to have been rated at that horsepower, but it rarely delivered the expected output.

In retrospect it may be observed that the thesis by De Forest and De Florez gave early indication of the abilities of these men in the field of industrial instrumentation in which both were destined to make outstanding contributions. Professor de Forest profoundly affected testing and inspection methods throughout industry by the development of electric strain gauges, magnetic apparatus for testing steel, brittle lacquers to portray stress distribution, and fluorescent oil to reveal cracks in nonferrous materials. Captain de Florez, recently appointed assistant chief of the Navy's newly created Office of Research and Invention, has brought special instrumentation into engineering practice. His work has been especially notable in the control of operations in petroleum refining and more recently in aviation, gunnery, and navigation.

Theaters for Export

AMERICAN-MADE films have long been one of our most important export items. In normal times they are seen by most of the 200,000,000 people who form the world's weekly moving picture audience. Although, as of the beginning of 1940, the United States possessed only about one-fifth of the world's moving-picture theaters, there are great areas where the ratio of theater seats to potential customers is far lower than in this country.

In a typically American reaction to this situation, a company has been organized by one of the major motion picture exhibitors to produce and sell complete, prefabricated theaters. Four basic models have been designed, ranging in capacity from 800 to 1,200 seats. While smaller communities in the United States are possible markets, the main interest is in South America. China and Russia are also considered capable of absorbing large numbers of such units, perhaps up to 20,000 theaters apiece. It has been estimated that, for overseas installations, the cost of producing, packaging, and shipping such theaters may run from 40 to 60 per cent less than for equivalent units built on the spot. The first of these prefabricated movingpicture houses was scheduled to open at North Long Beach, Calif., on Thanksgiving Day.

Much of the construction is of enameled sheet iron or of fireproof composition panels that snap into place. Even the aisle carpets are precut and ready to button to the floor. Only the concrete floor slab and the column footings are made on the spot. Heating, air-conditioning, and projection and sound equipment are all packaged ready for installation, in some cases requiring no more than being plugged into the nearest electrical receptacle for immediate operation. And, crowning touch, the towering theater sign can also be used as a television receiving

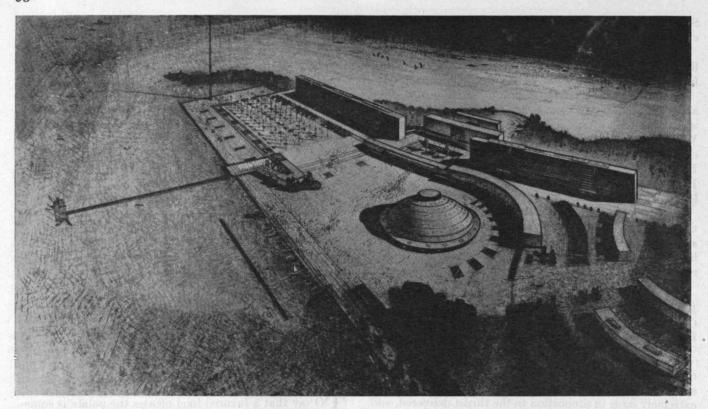
antenna!

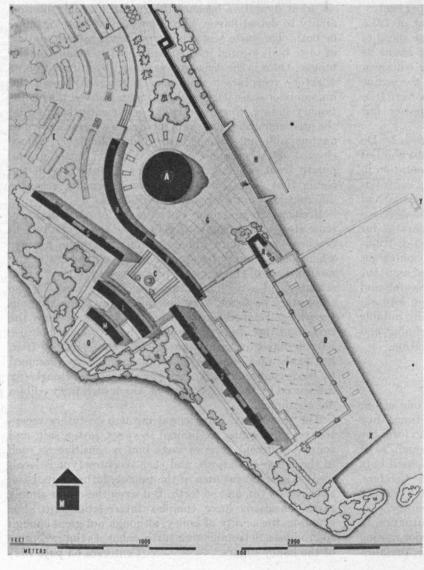
Good Taste

TO say that a favored food pleases the palate is some-■ what figurative because that organ has only limited ability to detect flavor. Flavor consists of taste or odor, or both. The taste sensation is produced by stimulation of taste buds located in the mouth cavity, mainly on the tongue. Odor is the sensation produced by stimulation of olfactory receptors in the nasal cavities. Although the human odor sense degenerated as man climbed the evolutionary ladder, this sense is still sufficiently keen to be the predominating element of flavor. This fact is known to anyone suffering from a head cold or hayfever, whose clogged nasal passages prevent odors of foods in the mouth from reaching the olfactory receptors, with the result that some foods, which are normally strongly differentiated in flavor, taste much alike.

Besides taste and odor, the sensation of touch and perhaps also that of pain may contribute to flavor. A crisp cracker tastes quite different from the same cracker when soggy, simply because of tactile differences in the mouth. Part of the flavor of pepper is due to the tactual sensation, of a tickling nature, which it produces in the respiratory passages. Very hot spices may stimulate pain receptors. Temperature also affects flavors because the taste buds are dulled by extreme heat or cold, because volatile flavor principles are released more readily from hot foods, and because the tactual sensations produced by foods containing fats, such as rich soups, are markedly influenced by the temperature at which such fatty edibles are consumed.

The true tastes, experienced through gustatory receptors on the tongue, are limited to sweet, bitter, salt, and sour. A different type of taste bud is sensitive to each of these four sensations, and each receptor type is localized on a particular area of the tongue, bitter at its base, sweet at its tip, and so forth. But even these four simple taste sensations have complex interrelationships. For example, the acidity of honey, although not great enough to produce a detectable sour taste, enhances the sweetness of the honey sugars. (Continued on page 132)





United Nations Center

Suggestive of a suitable center for the United Nations Organization is an architectural plan utilizing the site of the World Conference, held in March in San Francisco Bay. Until a site for the new world organization has been chosen, proposals such as this one by William W. Wurster, Theodore C. Bernardi and Ernest Born, San Francisco architects, can be regarded only as representing possible architectural treatment. Professor Wurster is head of the Department of Architecture and Planning at the Institute.

Shown above is a general view of the main group of buildings, Entrance Court, Court of Flags, and Library Court, which are adapted to the use of Strawberry Point in San Francisco Bay. Access to this center could be by airplane, small sailing craft, or land transportation systems.

At the left is shown a plan view of the suggested development. The letters on this illustration represent the following: A, Auditorium, seating 10,000 people; B, Archives Building, where documents of member governments are on file for official use; C, Library Court with revolving globe; D, Outdoor exhibits; E, Auxiliary buildings, housing scientific and study organizations; F, Court of Flags, where flags of member governments would be flown on state occasions; G, Entrance Court and Auditorium Plaza; H, Harbor for small craft; L, Library, for housing historical documents, open to the public; M, Museum; O, Outdoor museum; P, Press and Information Building; R, Restaurant, open to the public; S, Secretariats, housing offices of member governments; U, Underpass to parking areas; X, Beacon; and Y, Seaplane landing base.

Mission to Tokyo

Large Factor in Japan's Defeat Was Her Unwillingness to Use Her Best Scientists Most Effectively in Positions of Trust

By KARL T. COMPTON

UR mission to Tokyo came about much sooner than Edward L. Moreland, '07, Dean of Engineering at the Institute, or I ever imagined it would. In fact we had no idea that we would soon be in Tokyo when we were granted leaves of absence to go to Manila on dif-

ferent but related assignments.

Taken together, the tasks to which we were assigned represent the peak in the development of techniques for making scientists and engineers of greatest usefulness in the active theaters of military operations. These techniques were first employed in 1941 when the Office of Scientific Research and Development established a liaison office in London. Through this office, scientists in the United States and the United Kingdom could exchange information and assistance on problems on which they were working for the allied armed forces. Later, scientists and engineers who had worked on the development of new weapons in this country were sent to the London liaison office to give direct assistance to our own armed forces as these new weapons were put to use against the enemy. In the earliest stages this assistance sometimes went so far as to require scientifically trained personnel to operate the equipment against the enemy. The main task, however, was that of training military personnel in the maintenance and use of new equipment and, most important of all, of serving in an advisory capacity at staff level when new tactics based on recently devised weapons were being developed.

The most significant of the European scientific cooperative activities were those of the British Branch of the Radiation Laboratory for radar and the American-British Laboratory 15 for radar and radio countermeasures, operated respectively by the Institute and Harvard University under O.S.R.D. contract since 1943. The experience gained in Europe in co-ordinating the work of our scientists with the operations of our military leaders led to the development of equally effective liaison

in the Pacific.

Based on European experiences, a plan was developed by General of the Army Douglas MacArthur and his chief of staff, Lieutenant General Richard K. Sutherland, which actually brought the civilian scientific experts into full partnership with the military. At the same time, it retained for them that degree of independence of action on technical matters which is so necessary for effective scientific work. My colleague in the Office of Field Service of O.S.R.D., Alan T. Waterman, associate professor of physics at Yale University, was of great assistance in the development of this plan for securing maximum military help from science in the active theater.

The Pacific plan can be most easily understood by explaining its relationship to the regular military organization. Under the commander in chief, General MacArthur, and reporting directly to his chief of staff, General

Sutherland, are the staff, which may be divided into two groups - the general staff and the special staff. As usual, the general staff is composed of G1, personnel; G2, intelligence; G3, operations; and G4, supply. The special staff includes such officers as may be appointed by the commander in chief to meet the needs of his staff. In this case they included the chief signal officer, the chief engineer officer, the chief of antiaircraft, the chief of counterintelligence, and others. There was created a new special staff section called the scientific and technical advisory section, headed by Dean Moreland. Both general and special staffs have no direct operating responsibilities but serve in an advisory capacity to the chief of staff as he carries out the policies of the commander in chief. Dean Moreland's function was therefore to serve as special adviser to the chief of staff on general scientific and technical matters.

Also reporting to the commander in chief through his chief of staff are the various operating branches which, in this case, included the First, Sixth, and Tenth Armies, the Far Eastern Air Force, the Seventh Fleet, and the Army Service Forces of the Mid-Pacific and West-Pacific areas. To these branches was to be added a new operating organization known as the Pacific Branch of the Office of Scientific Research and Development. It was my initial mission to Manila to organize and head this new operating

agency

On all matters involving action, the Pacific Branch of O.S.R.D. (P.B.O.S.R.D.) was under the direct control of the commander in chief through his chief of staff, just like any operating military unit. But on all technical and administrative matters the Pacific Branch had free communications with the parent O.S.R.D. and its various divisions and contractors. Through the Office of Field Service and the contractors of O.S.R.D. the personnel and equipment needed for the Pacific job were secured. This project required several hundred engineers and technicians in addition to 300 tons of special laboratory and shop equipment which were being processed for initial shipment to Manila when the war ended.

Closely following the structure of the parent organization at home, the P.B.O.S.R.D. was divided into sections devoted to such matters as radar, countermeasures, rockets, special missions, pro- and antisubmarine tactics, fire control, chemical warfare, optical instruments, communications, and medicine. In all these fields the Pacific group had three functions: to provide expert advisory service, to supply skilled technicians and instructors, and, in its laboratory, to modify or construct equipment desired for use against special enemy objectives.

General MacArthur emphasized his desire to make the services of this P.B.O.S.R.D. freely available to any unit of the Army, Ground Forces, Air Forces, Service of Supply, or Navy, whether or not under his direct command. Arrangements had been effected thus to assist the Army

Strategic Air Force, under General Carl Spaatz, on Guam and Okinawa, while under the Armed Forces of the Pacific a branch unit was already operating under Lieutenant General Robert C. Richardson, Jr., on Hawaii, and small advanced parties were starting work for General George C. Kenney, '11, of the Far Eastern Air Force.

Thus the stage was well set for the military forces in the Pacific to utilize to the utmost the scientific forces of our country in the final all-out assault on Japan. The main resources would be initially supplied through the laboratories organized under O.S.R.D. back home. In Manila, the P.B.O.S.R.D. would provide the advanced echelon of scientific support. Each military organization operating in a forward area could draw on these sources for newweapon specialists or tailor-made equipment for emergency use. When the war ended there were about 60 scientists at work in the Pacific on problems ranging from medicine to the atomic bomb. These men were just becoming co-ordinated under P.B.O.S.R.D., and some 200 more were scheduled for early arrival. In Manila, arrangements were made for a 20,000-square-foot laboratory supplied with 150 kilowatts of power and 5,000 gallons of water a day. Quarters, mess, transportation, teletype communication with the United States, and other local necessities were in process of procurement when the Japanese surrendered.

Seldom has a carefully prepared mission been terminated more quickly or more happily than ours to Manila. On August 5 we arrived in Manila; on August 6 the first atomic bomb was reported; on August 8 Russia's declaration of war was announced; on August 11 the Japanese negotiated for surrender; on August 14 they agreed to surrender; and on September 1 the surrender was formally signed. Our mission to Manila was finished. We, and thousands of others who, far more than we, had earned peace the hard way, could soon go home. It was a

wonderful thought.

With the approval of the chief of staff, I sent a message to Washington cancelling all further preparations for P.B.O.S.R.D. and arranging a schedule for the orderly return to the United States of our scientists already in the Pacific. Some could go back at once, others would stay to complete some job that was important. All would be back by October 1 to help in the tremendous job of reconverting our universities and industrial laboratories to peacetime programs. Then, unexpectedly, was born the mission

to Tokyo.

Even though Japanese military power was rapidly deteriorating and there had been rumors that Japan had approached Russia to act as intermediary in a peace settlement, the Japanese acceptance of unconditional surrender came with startling suddenness. Although we were elated at the quick ending of the war, our previous experience with Japanese militarism gave us every reason to proceed with that caution which would enable us to attain our objectives with a minimum of casualties on our side. None of our soldiers had set foot on the mainland of Japan, and, in spite of the rescript ending hostilities, we could not be too sure of the reception that would await our troops when we began the occupation. A host of completely new and unexpected problems suddenly confronted us, the answers to which would be of inestimable value in our occupation operations.

We wanted to know, for example, how big a threat Japan could be, even after defeat. In this war of such a

highly developed technical character, how far had Japan gone either in production or in development (or even in conception) of new methods of warfare which might prove dangerous to world peace in the future? In the allied control of Japan, what scientific work should be allowed to continue as a contribution to the general welfare of mankind and what should be prohibited, at least until a peaceful regime is firmly established in the country? How had Japan organized its scientific effort in the war? What technical ideas or developments of the Japanese could we incorporate advantageously in our own future national security pogram?

Important policies and actions depended on answers to questions like these. Well-staffed investigating teams military, economic, civic - planned to go into Japan to study these questions. In particular, every branch of the Army, the Navy, and the Air Forces began immediately after V-J Day to get technical investigating teams ready. One of these teams alone planned for a personnel of 750. Others were smaller; some of the groups may have been

larger.

Actually there were very severe limitations on what could be done, and when. The main Japanese home army was intact, and there was much speculation as to what might happen when the initial contingent of a few hundred American troops landed with MacArthur to prepare the way for occupation. Would the Japanese Government control its army, its hotheads, and its fanatics? For weeks after the occupation started, the entire American occupying force could be wiped out almost overnight. Until the basic requirements for food, quarters, and safety could be provided and a working program established with the Japanese, it was obvious that investigating groups, however enthusiastic, could not be given a completely free hand to visit any and all parts of the country as they pleased.

But there was also hazard in waiting too long. War laboratories would be dismantled, their staffs scattered, and their records dispersed and possibly destroyed. So Moreland and I were asked to organize a scientific intelligence mission as quickly as possible, using scientists already in the theater. We were to get into Japan on the heels of the first occupation troops and make a rapid overall survey of such high spots as key Japanese scientists; principal laboratories under military, industrial, or educational auspices; and the Japanese organization of science for war. The results of this investigation were to be turned over to the appropriate military co-ordinating agency for guidance of all subsequent investigators and for the information of the military control office. We could have records impounded or put under guard, we might order men to appear before us, and we had power to have them arrested if they become recalcitrant.

We hoped that the Japanese scientists would co-operate so that the task would not be unnecessarily disagreeable. Fortunately this was the case. Perhaps it was helped by the fact that I had known a number of their leaders during the past 25 years, and some of them had been guests

in my home.

The mission was headed by Dean Moreland and included five civilian scientists, four officers attached for temporary duty from technical military branches, three interpreters, a driver, and two stenographic clerks. We hoped to add a few efficient WACs as soon as arrangements could be made for their safe quartering in Tokyo. Several jeeps and some office equipment completed the requirements. The mission was set up under Moreland's scientific and technical advisory staff section of general headquarters. It worked closely with the counterintelligence section, a most effective organization under Brigadier General E. R. Thorpe of which the Armed Forces of the Pacific may well be proud and of extreme importance during a very critical period.

Two weeks elapsed between V-J Day and MacArthur's landing with a small airborne party at Atsugi Airport, some 20 miles from Tokyo. This time had been requested by the Japanese to prepare their people to accept defeat — a most necessary procedure because the masses of the people, including the army, were largely unaware of Japan's desperate situation. The Japanese propaganda machine had concealed reverses and pictured strategic withdrawals as made only in order to draw United States troops into a trap for utter annihilation. To bring about a complete reversal of opinion in two weeks and to do it so completely that not a single American has yet been molested in any way, even though he be alone in a crowded Japanese district, is a phenomenal undertaking.

During this period there was great uncertainty as to what our occupation troops would encounter. If the surrendering government failed to control the masses of people and the active elements who might rebel at surrender, the situation could explode with violence. If guerrilla bands took to the mountains they could maintain violence and insecurity for a dozen years even though we might keep large numbers of troops in continuous occupation and even though such guerrilla warfare would result in the total destruction of Japan. Anarchy might ensue, leaving nothing on which to build the desired peaceable regime. The removal of the Emperor could lead to a religious war, and such wars are notable for their length and futility. The situation was extremely delicate. No wonder there has been uncertainty about the requisite size of the occupation force and the length of time it would be needed.

The pattern of Japanese reaction to the situation has become evident during the weeks of occupation. The Japanese have lived up to the surrender terms with a meticulousness that is almost unbelievable. On our side, the situation has been handled with consummate skill, in a manner which has saved many thousands of American lives and which I firmly believe can bring about a regime in Japan which we need not fear and which will be consistent with the ideals we have professed.

For three weeks after V-J Day we were busy in Manila in preparation for our mission. Military Intelligence in Washington sent over a carefully prepared list of Japanese scientific targets. This was augmented by much additional information from the Military Intelligence services based in Manila. By teletype we were informed of the names, occupations, and addresses of all Japanese alumni of M.I.T., the California Institute of Technology, Harvard University, the University of Chicago, and the University of California.

Then four of us went to Japan to set the stage. David T. Griggs and E. G. Schneider of the Radiation Laboratory went with the first echelon of the Far Eastern Air Force, while Moreland and I went with the advanced echelon of general headquarters of Armed Forces of the Pacific. Andrew Longacre, also of the Radiation Laboratory, was left in charge of the rest of the team in Manila, with instructions to bring them to Tokyo as soon as we radioed back that conditions were possible for living and working. No one knew what conditions would be faced. We were outfitted with K-rations, sleeping bags, and shelter tents, but we decided against side arms. After four days in Yokohama we moved to Tokyo, and Longacre's party joined us the following day.

The trip from Manila to Yokohama will remain as the only distinctly unpleasant memory of the whole Pacific experience. Two uncomfortable nights on greatly overcrowded courier planes were separated by a day and a night at a casual camp on Okinawa where we were thrown off the first plane to make way for an extra batch of high priority mail and a load of gasoline. We spent this day lying naked and motionless on army cots, oozing perspiration from every pore and vainly hoping that the good Lord might set in motion even one little breath of air. That night we stretched out on top of a Shinto shrine, just to be up where a little breeze might fan us, but rain drove us in. To make things worse, water was rationed to



M.I.T. Radiation Laboratory Photo

A glass-blowing shop in the Radiation Laboratory where many new types of electron tubes were made for use in military devices during the war

two gallons a day to each person for drink, bath, and laundry. Morale was pretty low. There are some fine new layouts on Okinawa, but we did not happen to strike one of them.

In compensation for this experience we found unexpectedly comfortable quarters, first in Yokohama and then in Tokyo where, despite the terrific destruction, a few of the fine modern office buildings and hotels were intact. Frank Lloyd Wright's Imperial Hotel, or rather the half of it that survived the Tokyo bombings, provides living accommodations for the officers attached to MacArthur's staff, and his office headquarters are in as fine a modern building as can be found in the world, the Dei Ichi Insurance Building. The Imperial Hotel evoked many critical comments of extravagance and inconvenience, but all admitted the interesting character of the architecture. In any case, the Imperial Hotel provided far better living than did pup tents and it had the first hot water since Brisbane. At first, the generals' dining room was served by Japanese male waiters. There was strenuous objection to the slow service, and so the generals were moved downstairs to a corner of the big dining room, with the colonels and majors — and the dainty, attentive, stage-costumed waitresses. I thought it an excellent move. Here let me note that although we were civilians, we were in uniform with general officer privileges, and throughout we were given every courtesy and facility that could go with a general's rank and responsibility.

Our air force certainly did a job on Tokyo! For miles and miles, as far as the eye could see, the city was an ash heap. From the air it looked like a huge expanse of debris, the brown coloring of which came mostly from the rusted corrugated iron roofing lying in the ashes. The smaller masonry structures also collapsed in the fire, while many of the large modern "fireproof" structures were gutted inside, although appearing undamaged from the air.

This third largest city in the world, with its adjacent, continuously built-up cities, covers about 210 square miles and had a population of about 9,000,000 people. It had about the same area and twice the population of Greater Chicago. Now perhaps 85 square miles of the densest part of Tokyo are completely destroyed; absolutely nothing is left but ash and rubble. In the remaining parts of the city probably half the buildings are destroyed or damaged. The only intact regions are the parks, shrines, and some of the university campuses. The damage far exceeds that of the great earthquake, though the loss of life was less. No high-explosive shells were used. Some 7,000,000 of the inhabitants are reported to have dispersed to the country. In some other strategic target cities of Japan the percentage of damage was even greater, but I suppose that Tokyo is now the most extensive mass of ruin in the history of the world.

An inspection of the burned homes discloses a very significant fact. Still standing in the ashes of a considerable proportion of the homes are many machine tools, such as lathes, drill presses, and winders. These homes housed the "phantom industry" of Japan. Each family would make some repetitive part, such as a screw or a coil. From a multitude of such homes the parts were brought to manufacturing plants for assembly into war equipment. Presumably many more homes were similarly engaged in ways that do not now show and whose equipment would, unlike the lathes, have burned. The elimination of this phantom industry along with a major portion of the

large manufacturing plants spelled Japan's defeat even before the atomic bomb was dropped.

Speaking of Japan's defeat, let me mention an illuminating episode, which bears on the concern (expressed by some in America) over the fact that some Japanese have not admitted defeat, although defeat is freely conceded in civilian circles.

One day, while we were questioning a Japanese army officer, he made the statement: "The Emperor told us to stop fighting, so we stopped, but we were not defeated." We asked him if he did not know that the Japanese Navy had been almost wiped out, that island after island had been lost in our steady advance toward the homeland, and that a crushing invasion of the homeland was imminent. He replied: "Yes, I know all those things, and you could have invaded Japan. But as long as the Emperor told us to fight we would have fought, and every Japanese soldier would have been killed. But we would not have been defeated."

To the Japanese, defeat is an inner spiritual thing like disgrace. But there is no disgrace in giving up the struggle when ordered to do so by the Emperor. The Japanese know full well that they failed to achieve their objectives in the war and that the war has brought them to a state desperately worse than that which they had before the war. They know that the Emperor's order was given to avert complete destruction and that the capitulation was unconditional. To the practical Anglo-Saxon mind this seems that they know they were defeated.

Granting the difficulty for an occidental to understand some workings of the oriental mind, every American in the occupation force is surprised and considerably puzzled over the apparent friendliness of the natives. Some of us attribute this to deep duplicity and sinister motives. Most of us think we can discern other predominating reasons. But first let me tell about the friendliness of the children. They are less complex and less spoiled by indoctrination than their elders. The following experience illustrates several points, all of them good.

Our first business with a Japanese scientist was to locate Hidetsugu Yagi, the "Vannevar Bush" of Japan, a former student at Harvard. This errand took us by jeep to his home in a far corner of Tokyo and off the main road. It was still a week before any allied headquarters had been established in Tokyo. We were unquestionably the first Americans to be seen along many of these streets. As we drove along, the children playing in the streets ran precipitately for cover into their homes. Sometimes a mother would dart out, snatch her offspring, drag the child into the house, and bar the door.

On the following day we made the same trip to continue our business. This time the children did not run; they stood by solemnly, big-eyed. But on the third day they began timidly to wave, and we waved back. On our return the street was full of grinning, waving youngsters, and some of the mothers looked on pleasantly.

Now, wherever Americans go, the children wave or hold up their fingers in the V-sign or try to call "Hello," and sometimes "Hello, Yank." And if an American stops, anywhere within 25 miles of Tokyo, he is likely to be surrounded by friendly appearing natives. Here is something to work on for the future. The fine performance of so many of our own Nisei in this war proves that the Japanese problem is one of education, religion, and culture rather than one of race. (Continued on page 114)

Chemistry Goes to the Battlefield

For an Expanded Educational Program the Listitute Takes Over Its Own Chemical Engineering Building, Built Four Years Ago as Development Laboratory for the Chemical Warfare Service

By Frederick W. Holt, Jr.

THE second largest war research unit at the Institute terminated its activities this month when Lieutenant Colonel Willard J. Slagle, '29, commanding officer of the Chemical Warfare Service Development Laboratory, returned to the Institute a building which M.I.T. had built but had never used for its own purposes. Now, after four years of service to the armed forces, the C.W.S. Development Laboratory is available to carry out peacetime instruction in chemical engineering. Like those of many other war projects, the activities of the Chemical Warfare Service were not widely publicized between November 7, 1941, and August 14, 1945, and consequently Building 12 may be a new structure to many readers of The Review.

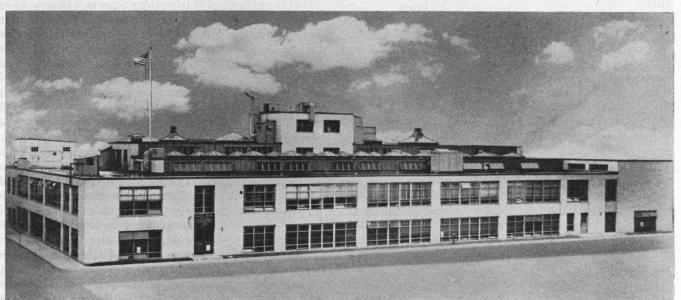
Covering a period of little more than four years, the history of this new laboratory serves as a splendid example of the manner in which the Institute stepped forward to serve the armed forces at a time when the scientific brains of America were desperately needed.

With Germany already well launched on its program of conquest, it was clearly evident in 1940 that only by a miracle could the United States remain at peace. Plans which had been developed to provide for this nation's defense assigned an important role to the Chemical Warfare Service. Members of C.W.S., and particularly Colonel Bradley Dewey, '09, realized that the research facilities of the principal Chemical Warfare Service laboratories at Edgewood Arsenal in Maryland would be overtaxed in

time of war. It was further evident that there would be danger in concentrating all research for this service at a single installation during a period of national emergency. Additional laboratory facilities were urgently required, and attempts were made to provide for the increased needs which were foreseen. According to the original plan, the new laboratory was to be a development rather than a research laboratory. It was to act as liaison between the Army and industry, and its primary function was to enable the armed forces to take fullest advantage of modern chemical research.

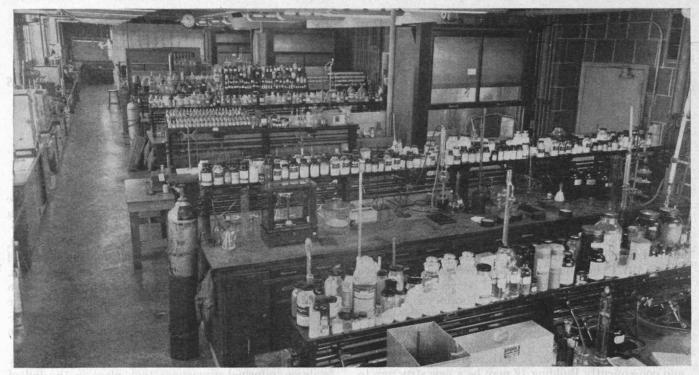
For the purpose of developing adequate laboratory facilities, informal discussions took place in the fall of 1940 between members of the National Defense Research Committee, officers of the Institute, and Colonel Dewey, representing the Chemical Warfare Service. It was pointed out that a new laboratory in Cambridge would be in the fortunate position of being able to call upon scientific personnel from the Institute, Harvard, Northeastern, and other educational institutions in the Boston area as well as technical men of the varied manufacturing plants in the vicinity. Such a laboratory would be reasonably accessible to the Edgewood Arsenal but yet sufficiently distant to provide dispersion of noncombat military effort so desirable in time of war.

Fortune smiled. The Institute already had architects' plans drawn for a new chemical engineering laboratory which would be ideally suited to the purpose. A program



All Photos by Chemical Warfare Service

General view of the three-story building built in 1941 as the Chemical Warfare Service Development Laboratory and now returned to the Institute for use as new laboratories for the Department of Chemical Engineering. The main group of Institute buildings, although not shown here, is at the extreme right.



A typical analytical laboratory in the new building. Among the projects undertaken in laboratories such as this were the development of new tests for toxic war gases and the development of new analytical tests which were adopted as standards by the chemical industry during the war.

to raise funds for the new laboratory had been interrupted, however, because of the threat of war. Upon the request of the Chemical Warfare Service, the Institute constructed its new chemical engineering building with few modifications and at its own expense. When the laboratory was finished, it was turned over to the Chemical Warfare Service for use during the war. Under the terms agreed upon, the C.W.S. could expand its research facilities under favorable conditions at a time when additional laboratories were sorely needed. At the same time, the Institute could proceed with the erection of a building which it would need for its peacetime program of instruction. Construction of the new building began in April, 1941.

On June 1, 1941, before its completion, the new laboratory was officially opened under the command of Colonel Jacquard H. Rothschild, '42. At the time, the laboratory staff consisted of five officers and one secretary and had temporary headquarters in the Department of Chemical Engineering in the basement of Building 4. By November 3, 1941 — one month before the attack at Pearl Harbor — a considerably enlarged staff was able to move into the completely new laboratory, designated as Building 12 and connected with the main buildings of the Institute. At that time it seemed that the new laboratory, three stories high and as large as a football gridiron, would be capable of meeting any future needs of the Chemical Warfare Service. However, the flood of research projects assigned to the laboratory required the addition of many new employees until the peak of 350 was reached in June of this year, and soon every square foot of available space was at a premium.

But a new laboratory building, however modern and well equipped, is not alone sufficient to carry on development work. Personnel, materials, and operating services were required, and the personnel had to be knit into a cooperative, compact organization. To handle the wide variety of projects assigned to the laboratory, the staff was organized into a number of divisions, each with its chief. The divisions were in turn composed of sections, with a leader at the head of each.

Each division in the laboratory served one of three functions: executive control, service, or research. The executive division had charge of the laboratory as a whole and performed all of the necessary administrative duties, including obtaining personnel, procuring supplies and materials, making contracts, and providing liaison. The service divisions were responsible for providing all services required by the laboratory. Under the direction of these divisions were included an editorial group charged with the publication of laboratory reports, a library, stock rooms and tool cribs, a photographic laboratory, a printing shop, a shop for glass blowing, an analytical section. and an engineering section in which were included the machine and carpenter shops and drafting rooms. Occasionally the engineering and analytic sections carried on research problems for which they were equipped, but their main function was to provide service to the other divisions of the laboratory. The research divisions were responsible for carrying out the research activities of the laboratory and were divided into groups according to the type of work on which research was required. There was, for example, a chemical engineering division, whose work included establishment of chemical processes, operation of pilot plants, and similar activities, and a chemical development section, whose activities were largely directed to the development of new organic chemicals.

Laboratory personnel consisted of Chemical Warfare Service officers and civilians, all of whom were chemists or engineers recruited from various parts of the country. The laboratory was in constant touch with members of the regular Institute staff. Professor Harold C. Weber, '18, and Scott W. Walker, '40, and Roy P. Whitney, '35, associate professors, all of the Department of Chemical



Typical of several organic chemistry laboratories in the new Chemical Engineering Building is this room where work on jellied-gasoline flame throwers was undertaken by the Chemical Warfare Service during the war.

Engineering, were assigned on a full-time basis to assist the laboratory with its many projects.

Women too rendered assistance. Fortunately, chemistry is one field of science which has greatly appealed to women, and the previous chemical training of a number of women qualified them for special technical tasks. Others were prepared to work on the drafting boards or as labora-

tory assistants or operators of special instruments. Their adaptability and enthusiasm for their assignments played a decisive part in the successful operation of the laboratory.

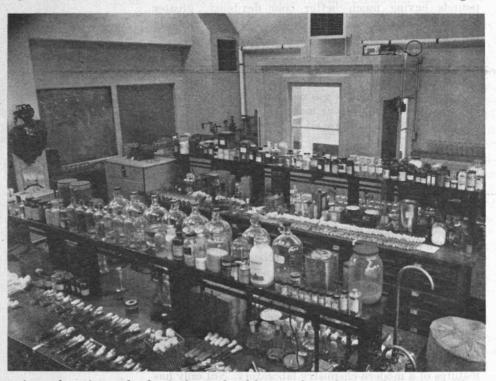
Research projects assigned to the laboratory covered a wide range of topics and required the use of all branches of knowledge from ablution to zymurgy, including anthropology and a great deal of electronics. Although it is not possible to provide comprehensive treatment of even the major research tasks undertaken by the laboratory, an attempt may be made to outline a few representative projects.

Upon completion of the new quarters, all research on gas masks was transferred to the laboratory, and the development of new designs was undertaken. At the beginning of the war, the standard service mask was bulky and heavy, whereas a lightweight, hoseless mask was required for combat service. As

part of the gas-mask project, an anthropological survey was made of the faces of men in the Army in order to produce a minimum number of designs which would fit all physiognomies. As a result of this survey it became possible to standardize on three sizes of masks. One of the illustrations shows the model of a man's head, synthesized from measurements in our survey and adopted as one of the three standard sizes. The anthropological survev is believed to be the most extensive of its kind thus far conducted, and the results of this study are applicable in the design of such products as hats, glasses, goggles, and other items that must fit the face or head. The work on gas masks also resulted in the use of more effective chemical fillings, better filters, and a lighter weight canister.

The laboratory's chemical engineering activities were devoted primarily to a study and

development of new and improved chemical processes. The results of this program were applied with considerable success in many plants producing chemical products. Included in this program were the construction and operation of several pilot plants, one of which was carried to a semiworks scale, producing each day several tons of a much needed war chemical. Flame-thrower fuels and guns



Among the projects undertaken in the mycology laboratory shown above was the program for developing methods of combating fungi and bacteria, which proved troublesome in the early phases of fighting in the Pacific. The work done at the laboratory was effective in saving from premature spoilage much equipment intended for use in the tropics.

were investigated by several groups, and an indoor range was set up for test purposes at Lawrence, Mass. Extensive studies were made on jellied gasoline, which appeared to produce the best flame under highly diversified conditions such as might be encountered in actual combat. New guns, control valves, and pressure tanks were devised both for mechanized units and for portable use.

The war offered our first encounter with conditions experienced in the tropics. In the early phases of fighting in the Pacific, many items of military need deteriorated rapidly because of humidity, fungus, and growth of bacteria. This laboratory inherited the task of devising means for combating mildew and for producing fungi-proof materials. The mycologists at this laboratory were able to develop formulas providing complete protection against organisms producing rot or mildew under tropical conditions. The beneficial results of this research were extensively used by the entire Army.

Originated for military purposes but having useful application in civilian industry were the detectors for toxic gases which were either improved or invented at the laboratory. Detector materials of greater sensitivity than had previously been known were discovered. A new kit, weighing but two and a half pounds, was constructed, with which the presence of any of the war gases could be detected. The laboratory carried out the entire production of one of the detectors for the allied armies. Gassensitive papers, crayons, paints, and similar materials were also developed as part of this program.

The scarcity of natural rubber presented a great problem in the manufacture of many items used by the Chemical Warfare Service. A rubber section, completely equipped with mills, calender, and hydraulic press, was organized to carry out development on the compounding of synthetics for use in molded articles or for coating and impregnating. This work resulted in new rubber compounds having much better cold flexibility, greater strength, and reduced curing time than had previously been known.

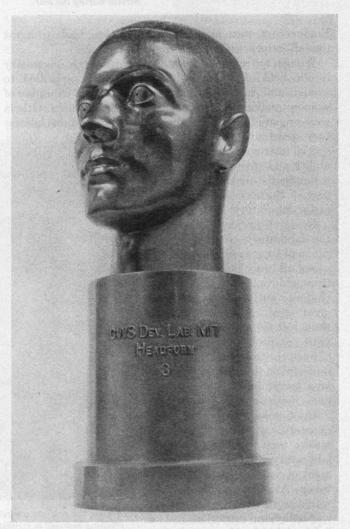
A group studying fabrics developed a fireproof cloth that could be laundered without losing its noninflammability. Coated and impregnated textiles were improved to a point where the toxic gas resistance was five times as great as it was for pre-war materials. Miticide-resistant clothing was made and proved to be of great value in the South Pacific area.

One of the long-range projects of the laboratory was the examination of captured enemy chemical warfare equipment and its comparison with equivalent products of the allies. The work in this field was not only of great value to the Chemical Warfare Service but was also of considerable aid to our country's Military Intelligence.

Perhaps the most interesting of the laboratory's projects is the last to be discussed. Although every possible effort was made to make the results of chemical research available for military purposes, it was felt that armies in the field required a mobile but completely equipped chemical laboratory. Such a unit, consisting of several motor-drawn trailers, was designed by the laboratory to bring chemistry to the battlefield. Although the mobile unit is very compact, it is supplied with all the essential features of a modern chemistry laboratory. Not only has it been used in making special analyses of war gases but it has also served as a general laboratory for any chemical problem that might arise in the field.

When required, developments were supervised in factories, and in several cases assistance was given in setting up and operating production lines. Frequently it was found that new methods of evaluation were desirable, and improved analytical procedures were devised, many of which became standard in industry. New testing instruments were designed and produced to aid in analysis and inspection of Chemical Warfare products, and facilities were built for testing military equipment under desert, tropical, and arctic conditions. It is impossible to give a detailed description of the many research projects carried out at the laboratory, but the examples mentioned here should serve to give an indication of the diversity of problems which were assigned to it and which were successfully carried out.

The wholehearted co-operation of the Institute and its staff illustrates the very close interrelation between the normal peacetime activities of institutions of higher learning and the nation's wartime needs and thereby gives additional evidence for encouraging education in science and engineering. Wherever scientists meet on a basis of mutual understanding, a happy productive relationship is established which is capable of satisfactorily overcoming many difficult problems. Certainly this has been the experience of those who have worked in the Chemical Warfare Service Development Laboratory during the last four years.



Model of head of "Mr. America, No. 3." The model is synthesized from measurements of thousands of men in the Army.

Where Is the Long Hair?

In Exploding the Popular Misconception of Research Men, the War Has Also Shown the Need for Widespread Training in Science

By PHILIP M. MORSE

URING the next few years many lessons will be drawn from our war experience concerning the interrelations between science, warfare, and the social-economic activities of the country. One lesson, which has already been learned by the armed services and by industry and which perhaps is coming to be realized by the general public, is that pure research scientists are not all the long-haired, impractical dreamers which the

general public has taken them to be.

In popular fancy, the academic scientist has been the absent-minded specialist, immersed in recondite trivialities, to be patronizingly patted on the head occasionally but never to be allowed to interfere in "practical" affairs. However, during the war a great number of academic scientists gave up pure research and, through the Office of Scientific Research and Development, headed by Vannevar Bush, '16, made effective contributions to practical affairs. The record of their contributions belies the popular connotations of the word "professor."

It is not particularly surprising that the men of science were pre-eminent in technical research and development of military applications. Pure science has recently compiled a large body of comparatively unapplied knowledge and has developed a large number of highly complex instrumentalities in the course of its exploration of atoms, electrons, and nuclei. This knowledge and these instrumentalities have immense potentials for useful application in industry and commerce, which would have taken 25

vears to become realized in normal times.

Normally, the engineers would have moved into this field gradually, learning the instrumentalities and techniques from the pure scientists and building from them practical applications for the everyday world. The businessmen would have eventually seen to it that the equipment developed by the engineers got into everyday life, and the military men would have ultimately learned to apply the equipment to tactics and strategy. Such is the normal peacetime sequence of events. Suddenly, under stress of war, these applications had to be made in one or two years instead of 25. Workers in pure science had the knowledge which had to be applied; but who was to do the engineering, who was to oversee the production and the military use of the new equipment, who was to take over so rapidly from the long-haired scientists?

The answer, of course, was not univalent. A great number of engineers were able to learn the salient facts of nuclear theory, electronics, and electromagnetic theory rapidly enough to make important contributions in the application of these fields. A number of military officers were able to learn enough modern science to be able to use these new instrumentalities effectively in operations. But a great deal of the engineering, administration, and tactical planning was necessarily done by the academic scientist, and it was done well.

From one point of view, it is to be regretted that it has been necessary to turn the channels of science into methods of destruction, and no one regrets the need for such action more than the scientists themselves. At the same time, in a war in which the subjugation of nations and even continents is at stake, the scientist, like any other citizen, must conform to the patriotic duties which his nation and society at large impose upon him. The scientist is perhaps somewhat more fortunate than some of his fellow workers in other fields in that the results of his war work lead to useful peacetime applications.

It is possible to cite many examples in which the professional scientist performed valuable services in engineering, production, or in military planning. A list of names and services would monopolize this issue of The Review. A few examples, selected from the author's acquaintance, are given in this article as being typical; however the few enumerations given here preclude any

attempt at completeness.

In a number of cases, the scientist did the engineering work on the development of new weapons because it was quicker for him to apply the principles of science than it was for the engineers to learn the principles of a new branch of science. This is not to say that the practices required by war exigencies are necessarily the best ones to follow in peace; it does indicate that our scientists have latent and additional talents which have not previously

had opportunity for expression.

Professor John C. Slater, Head of the Institute's Department of Physics and author of many papers on quantum theory and several books on theoretical physics, spent two years at the Bell Telephone Laboratories supervising the development of engineering principles of design of power sources for microwave radar sets. His work is basic for future electronic engineers. During the war, Professor Luis W. Alvarez, physicist at the University of California and co-author in 1940 of a paper on "A Quantitative Determination of the Neutron Moment in Absolute Nuclear Magnetrons," was responsible for the development and engineering design of one of the most accurate radar methods of bombing through overcast, which was used with great success by our B-29's against Japanese cities. He is also responsible for the design of the most practicable scheme known at present for landing planes through fog - the plan which has saved many a B-29 and crew.

Not infrequently the scientist had to go beyond the engineering phase and help in the planning of production because it turned out to be easier for him to learn the production problems than for the production engineer to learn the new theory in a hurry. Examples of this sort of utilization of pure scientists have been particularly prevalent in the development of the atomic bomb. Here, workers in theoretical physics had to turn metallurgists;

cyclotron experts had to design calutrons (the modified cyclotron) for mass production of U-235; and chemists, customarily engaged in theory, were an active help in solving the practical problems of immense complexity which arose in isotope separation.

In this huge project, academic scientists have also proved their ability as administrators of large organizations. Professor J. Robert Oppenheimer of the University of California, author of "On the Applicability of Quantum Theory to Mesatron Collisions" and many other papers on nuclear theory, supervised the immensely important development work on the atomic bomb done at Los Alamos, N. M. In many other fields academic scientists took an active and effective part in the planning and administering of large-scale engineering and production of war equipment.

But the object lessons of the past five years point still further. Many of the most important new instrumentalities of war involve principles so new that most military men were ill-equipped to understand them or to plan for their effective use in operation. Although many regular officers dug into the unfamiliar fields and learned enough of the scientific background to be able to devise adequate tactics for the new weapons, here again in many cases it was easier for the academic scientist to learn tactical and strategic theory and then to help in devising military doctrine and in simplifying logistics.

The contact between the military service commands, the laboratories, and industry has been made more effective by the assistance of pure scientists. Two examples will suffice to illustrate this statement. Professor Julius A. Stratton of the Institute's Department of Physics, author of "Elliptic and Spheroidal Wave Functions" and many other publications, has rendered immensely valuable service as an expert consultant to the Secretary of War. He helped the air forces operational commands, the service forces, and the executives of the electronics industry to reach common agreement on needs, uses, and priorities for radar equipment.

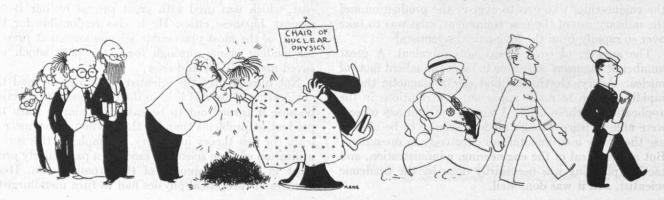
William P. Allis, Associate Professor in the Department of Physics at M.I.T. and co-author of "A Theory of the Townsend Method of Measuring Electron Diffusion and Mobility" and other papers, first as major and then as lieutenant colonel in the service forces, has been a most successful liaison officer between the Army Service Forces and the National Defense Research Committee laboratories. It is interesting to note that in such activities as these the essence of success lies in obtaining the co-operation of large groups of personnel — a field in which the scientist was supposed to be deficient.

The scientific method has proven to be the key to these varied achievements. It is therefore not surprising that

research men, long accustomed to the scientific attitude, have been able to make important contributions to the theory and practice of military tactics and strategy. The principles of the scientific method are applicable in all branches of endeavor. As with the other examples given, the point is not that the pure scientist was necessarily better than anyone else in making these applications but that he could and did become practical, that he could learn other fields of activity to which his specialized scientific knowledge and way of thinking was readily applied. In the difficult field of devising the most efficient co-ordination between the new military equipment, the usual weapons of war, and the soldier and sailor who must operate them, it often turned out to be easier for the scientist to learn the details of military doctrine and to become a tactician than it was for officers to learn the scientific background of the new equipment.

The field of applying scientific principles to military operations has been called operations research. Very little can yet be said concerning this important field of application of science because of security restrictions, but it can be pointed out that all the headquarters staffs and many of the field staffs of the land, air, and naval forces of the United States and England have had operations research groups acting as advisors. Professor P. M. S. Blackett, formerly of Cambridge University and the University of London, a well-known research scientist in nuclear physics, became the chief scientific advisor of the first Sea Lord of the British Admiralty and made numerous important contributions to the successful operation of the British fleet. The studies of his group, for instance, on the size and formation of merchant vessel convoys resulted in recommendations which substantially reduced the number of ships lost to U-boat attack in the North

Many scientific men worked with the operating forces at outlying bases, developing practical applications of general scientific principles as the needs arose. Robert F. Rinehart, assistant professor of mathematics at the Case School of Applied Science, as scientific advisor to the staff of the commander of the United States submarine forces in the Pacific made important contributions toward sweeping the Pacific clear of Japanese shipping and toward keeping our submarines from being sunk in the process. John R. Pellam, '40, who interrupted his graduate work in theoretical physics at the Institute to volunteer for operations research, was able to combine his technical knowledge of special equipment and his knowledge of the tactical situation at the Gilbraltar and Morocco sea frontier, where he was stationed, to suggest special tactics which kept eager U-boats out of the Mediterranean during the crucial (Concluded on page 130)



THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

President's Report

IN concluding the comprehensive condensation of President Compton's report to the Corporation (of which the activities of the Radiation Laboratory were summarized in the November issue), The Review now turns to that portion of the report dealing with the impressive program of war activities which were entirely under the Institute's direction.

The Draper Computing Gun Sight. Next to radar, the M.I.T. development most extensively used in the war was probably the Draper gun sight, which introduces the proper lead angle in firing at moving targets, be they tanks or airplanes or ducks. Some 80,000 are reported to be installed on naval vessels for direction of the vessels' lighter, fast-firing antiaircraft guns, and they have turned in fine performance records against attacking Japanese aircraft, especially the suicide planes. The existence of this weapon and some information about it have already been released by the Navy.

This is one of a series of devices employing gyroscopic principles which were invented and built by Professor C. Stark Draper and his able associates in the Instruments Laboratory of the Department of Aeronautical Engineering. The work began several years before the war, resulting first in a turn-and-bank indicator for aircraft piloting. In 1940, the Sperry Gyroscope Company gave the Institute a generous backing to finance

the development of a leadcomputing sight based on the turn-and-bank indicator previously developed for Sperry.

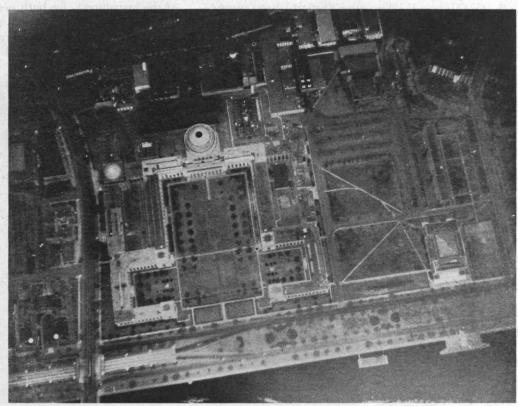
The Instruments Laboratory has been continuously occupied with advanced firecontrol research for both services; the program undertaken during the war, which will continue in part until certain specific tasks are completed, provides the basis for a fundamental attack on peacetime problems of control and instrumentation. The prime objective of this laboratory is the education of students on an advanced level in the philosophy and techniques of instrumentation, and the specific research projects undertaken for government and industry by the group have led to advances in the art which will be reflected in the educational program.

The Servomechanisms Laboratory. For some years, the Institute has pioneered in the theory of servomechanisms and, as far as I know, has been the only educational institution to maintain a laboratory and educational program in this little-known engineering field, a field evidently destined to increase rapidly in importance as automatic controls of machinery multiply. This laboratory, under the leadership of Gordon S. Brown, '31, Associate Professor in the Department of Electrical Engineering, has been an important national asset during the war, both in developing equipment and in raising the level of the art of servomechanisms among the chief manufacturing concerns involved in production of devices for transmitting rotational motion with power amplification.

With a staff of 140, the laboratory developed mechanisms which, with great accuracy and stability, followed the direction given by fire-control computing devices, thus providing an essential link between the source of the information and the gun position. Among the important types of guns thus equipped with servos developed in this laboratory are the 40-millimeter antiaircraft gun of the Army and a similar unit for the Navy.

The laboratory also, by direct research and consultation, aided importantly in the more refined development of automatic controls and in analytical application to the design of dynamic systems. Here again the laboratory originated, and in fact continues, as an educational program. Prior to the war, Professor Brown and his group, together with Professor Draper, were engaged in teaching fire control to naval officers and in developing laboratory facilities for this purpose, and along with this educational program they developed an organization and method of attack which enabled them successfully to meet the very complex problems of control arising during the war.

(Continued on page 126)



This night photograph of the Institute was made by means of 1,500-pound electric flash illuminating equipment for airplanes, developed during the war by Harold E. Edgerton, '27, Associate Professor of Electrical Measurements, and his associates as an outgrowth of their earlier work in stroboscopic and intermittent illuminants. The single flash required for making this photograph at an altitude of 3,500 feet was produced by discharging a capacitor through an illuminating discharge tube. During the war, air-borne flash units, such as that used in making this picture, were employed to photograph night operations in enemy territory.

Institute Finances

CONSIDERABLY expanded beyond normal by war research and training programs, the Institute's finances for the 1945 fiscal year are disclosed in the annual report of Horace S. Ford, Treasurer of the Institute.

Excluding investment turnover of approximately \$25,000,000, the financial operations for the past year reached a new high with a total in excess of \$45,000,000, of which more than \$5,000,000 was for the usual Institute operations. Contract operations of the Division of Industrial Coöperation, which had 148 contracts in force on June 30, accounted for the remainder - just short of \$40,000,000. Of this, \$12,500,000 went for salaries and wages, \$24,000,000 for materials and services, \$2,000,000 for travel, communications, shipping charges, new construction, and related operations, and the balance of \$1,312,000 was allowed the Institute as overhead in reimbursement for administration and plant expenses and for use of Institute property. The major portion of D.I.C. expenditures was for the Radiation Laboratory, which was approaching a \$5,000,000-a-month gait when V-J Day arrived.

And the state of t	1942	1943	1944	1945
Annual increase in volume over pre- vious year, per cent		91	70	57
Per cent overhead allowed for wages and salaries			12.2	
Per cent total revenue	11.0	5.7	4.5	3.3

The four-year summary of contract operations, included for the first time in the Treasurer's report, shows progressive increases in volume over previous years since 1942, accompanied by progressive decreases in overhead and total revenue allowed the Institute, as tabulated above.

The total of overhead allowances for the four years is somewhat more than \$4,000,000, of which more than \$3,000,000 was reimbursement to the Institute for direct out-ofpocket operating expenses. Somewhat less than \$1,-000,000 was paid for the use of space and for the depreciation of equipment. After the wear and tear and almost complete deferred maintenance during the past four years, there remains for rehabilitation and renovation less than \$1,000,000. All of this and more will be required to place the Institute in a position to meet its already evident postwar needs.

There has been a persistent build-up of our scholarship and other funds in the past four years. The amount of cash belonging to the Endowment and

Other Funds, ordinarily invested but since 1942 advanced to finance the contract and other wartime operations of the Institute (exclusive of the Radiation Laboratory), was \$3,400,000, slightly above the figure for last year. During the past year, Endowment and Other Funds have increased \$2,900,000. Of this, \$1,250,000 is from capital gifts, including funds advanced for the building of a new library, and nearly \$1,000,000 has resulted from profits on the sale of securities in the last two weeks of the fiscal year. The balance was in income added to the funds and not expended and from transfers of certain current balances for investment purposes.

General Kenney Visits Technology

CLIMAXING a two-day welcome from his home city of Boston, General George C. Kenney, '11, was greeted at the Institute on October 19 by President Compton. Accompanied by his longtime friend, Orville B. Denison, Secretary of the Class of 1911, and his brother-in-law, Leslie G. Glazier, '11, General Kenney made a whirlwind tour of a number of the major war research laboratories at the Institute. Here he met face to face for the first time some of the scientists and engineers who pioneered in the development of the instruments that proved so useful to him and his valiant forces in carrying out the aerial campaign leading to the defeat of Japan.

Alert to the power of technical superiority, General Kenney was liberal in his praise of the Institute's accomplishments. At the same time, he provided constructive and practical suggestions for the future development of the instruments for both peacetime and military uses.

A highlight of the occasion was the reunion of General Kenney and Lieutenant Colonel Jay Zeamer, Jr., '40, holder of the Congressional Medal of Honor, who served



M.I.T. Photo

Boston's home-coming celebration for General George C. Kenney, '11, included a visit to some of the Technology laboratories where much of the newer developments in military equipment were originated and perfected. Shown in the usual left-to-right order in Dr. Compton's office before the tour of laboratories are Orville B. Denison, Secretary of the Class of 1911, General Kenney, President Compton, and Leslie G. Glazier, '11, brother-in-law of General Kenney. General Kenney is the first of the prominent military Alumni to be welcomed back to the Institute.

under General Kenney in the Pacific until he returned to this country for hospitalization as a result of combat wounds. Since his release from active duty, Colonel Zeamer has been a student at the Institute and was recently awarded the master's degree in aeronautical engineering.

Of the many high ranking officers among Technology Alumni who have distinguished themselves in World War II, General Kenney is the first to receive an official

homecoming welcome by the Institute.

After leaving Technology, General Kenney became associated with his brother-in-law for a number of years in the engineering and contracting business. He began his military career by enlisting as a flying cadet in June, 1917, and held a captaincy at the end of World War I. Early in 1940 when this country first recognized the threat of war, he was commissioned a lieutenant colonel and then rose rapidly to brigadier general in January, 1941, to major general in February, 1942, to lieutenant general in October, 1942, and to general in March, 1945.

Visiting Committee Report

THE Committee on Architecture and Planning* met on March 9 and reviewed the curriculum of the School, visited the Rotch Library and examined its requirements, and made recommendations for improving the William Emerson Room, a lounge on the fourth floor of Building 7, set aside for the use of students of the School of Architecture and City Planning.

The principal concern of the Committee was with cer-

* Members of the Committee for 1944-1945 were Ralph E. Flanders, chairman, Harry J. Carlson, '92, Ralph T. Walker, '11, Louis H. Skidmore, '23, Gordon Bunshaft, '33, captain, United States Army, George Howe, and Gordon S. Rentschler.

tain problems relative to the curriculum. It is the purpose of the School to have a strong framework of study clearly connected with the scientific and technological forces of the Institute. However, there must also be a strong accent on the social and humanities side of the Institute program. Problems arise in attempting to fit the first and second vear curriculum of the School into the standard course of instruction at the Institute. To integrate its instruction with the courses generally required in the first two years has been somewhat difficult for the Course in Architecture and particularly difficult for the Course in Planning. In view of the existing standing of this School at M.I.T. and its tremendous future possibilities, it is the considered opinion of the Committee that some minor adjustment should be made whereby courses of study which seem to be essential to Planning can be provided, particularly in the second year curriculum. The Committee did not go into detail in this matter since the problem is already well defined. The members did express their belief that conformity with the general curriculum which has been worked out for all Courses is of less importance than making such adjustments as are required to give the best possible training in Architecture and Planning.

It is the intention to expand the graduate work within the School. There are possibilities of commercial and also fundamental research, both of which are made appropriate by the connection between this School and the Institute as a whole. There is no question but that technology in the broad sense is becoming a dominant factor in the fields which the School occupies, and we are well on the way to realize the possibilities.

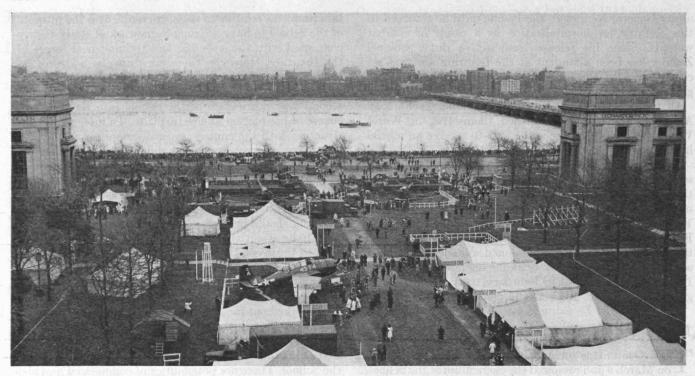
The Committee visited the Rotch Library and considered its needs. As the Central Library staff is increased, it may prove advisable to ask them to do a greater amount of the work of the branch library than they do at present,

such as cataloguing the books. The Rotch Library needs greatly increased funds for new accessions, which, in the judgment of the Committee, should be concentrated on current literature in architecture and city planning rather than to any great extent on historical material. As an example, the School is working rapidly toward such modern problems as airport location and design, for which it is extremely important that pertinent information should be made available.

The Committee hopes that the William Emerson Room can be refurbished before being returned to the exclusive use of the students of the School. The room has great possibilities which are a long way from being realized. Put into proper shape, it should and can serve as a



The Institute's new differential analyzer, whose operation on war research projects during the past three years was publicly announced last month, is inspected by (left to right): Professor Henry B. Phillips, Head of the Department of Mathematics; Vannevar Bush, '16, inventor of the original differential analyzer, who, while at M.I.T., initiated the work that led to the new machine; Professor Harold L. Hazen, '24, Head of the Department of Electrical Engineering; and Professor Samuel H. Caldwell, '25, director of the Center of Analysis in the Department of Electrical Engineering.



Great Court of the Institute showing some of the military equipment displayed during the Victory in Science exhibit held on November 10, 11, and 12. Many people are lined up along the Charles River bank watching the Coast Guard demonstration of a rescue from a downed plane by helicopter.

common center for the contact of students with each other and be of definite service in generating and maintaining in the School that spirit which is necessary to make it a successful organization.

The spirit of the School is excellent, organization is well under way, and the Committee has no fears as to the future of the School in the postwar years.

Victory in Science

MORE than 75,000 persons attended a Victory in Science exhibit held at Technology on November 10, 11, and 12, when the Institute, in co-operation with the Massachusetts War Finance Committee, displayed new weapons of war in the Great Court and also in the field between the Institute's main buildings and Walker Memorial. In addition to the extensive exhibit of war equipment, certain of the Institute's laboratories were also available for inspection. Admission to the exhibit was through purchase of war bonds.

Institute exhibits on display included the automotive laboratory where Rolls Royce and Allison engines, an 1800-horsepower radial aircraft engine, and demonstration cut-away models were in operation; the 2,500,000-volt Van de Graaf belt-driven generator used in research on atomic nuclei; and the huge Wright Brothers Wind Tunnel used for studies on aerodynamics.

An exhibition of 160 Navy photographs on the general theme "Power in the Pacific" were on display in the first floor halls of the Institute, and motion pictures of the atomic bomb explosions were also shown.

In tents and open structures adjoining the Institute buildings recently developed military equipment was displayed, while the Charles River was the scene of rescue demonstrations staged by the United States Coast Guard.

Radar formed an important part of the exhibit. The

SCR-584 mobile set, used effectively against buzz bombs in England, the Ground Control Approach radar system for guiding plane landings to airports, radar systems for bombing ships and night fighters, and radar-directed searchlights were in operation.

The Navy's exhibits included a Mark II basic training turret, a gunairstructor, a star recognition trainer, accurate scale models of Navy ships, a dual projector trainer, and the Avenger plane with folding wings. A flotilla of surface vessels, including PT-boats and landing craft, cruised on the Charles River.

The Army's exhibit included a 120-millimeter substratosphere antiaircraft gun, a recoilless gun, a 40-millimeter antiaircraft gun and Mark 51 remote indicator, a Sherman tank with flame-throwing equipment operating for more than 100 yards, and the Army Quartermaster show — broken down into four categories: clothing, food, fuels and lubricants, and mobile equipment — displaying facilities and equipment provided to troops.

Several interesting demonstrations were operated at various times throughout the day. Among these were the Edgerton Flash Unit, making possible the night photography of enemy country from planes; demonstrations of parabolic focus for searchlights and radio systems; and a demonstration of a communication system employing a light beam as the connecting "circuit."

German V-1 bombs, prefabricated harbors made in sections and floated across the English Channel for use in the Normandy invasion, and a unique bombing trainer device using the principle of controlling the bomb on the course it takes from the plane to target were also exhibited.

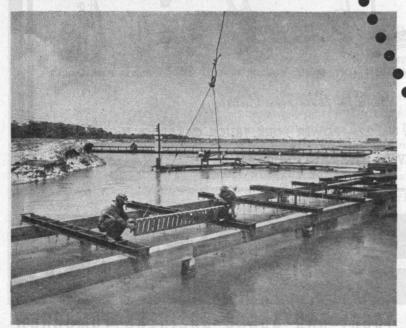
The Victory in Science exhibit provided the first opportunity for many persons to see the military devices which had been developed (many of them at the Institute) for use in World War II. (Continued on page 122)

CUPRO-NICKEL

IN WORLD'S LARGEST MARINE TESTING STATION



Racks exposed by draining sea water pond



Pier at Kure Beach, with test rack being lowered by crane

TEN years ago The International Nickel Co. established a sea water corrosion testing station at Kure Beach, N. C. The value of the results obtained attracted the cooperation of other companies, and led to such expansion that today this is the largest marine corrosion testing station in the world.

One highly significant fact about this station is that the racks on which the test specimens are held are generally made either of Monel metal, or 70-30 coppernickel. Thus Cupro-Nickel again receives emphatic endorsement of its resistance to severely corroding conditions. No Cupro-Nickel or Monel racks have had to be replaced because of corrosion, though many test specimens of other metals and alloys on those racks have been seriously affected.

Revere suggests Cupro-Nickel for use where corrosion and the effects of impingement attack must be minimized, not only in marine installations, but in chemical, petroleum, and general industrial plants. Revere Cupro-Nickel is available in tube, plate, sheet and strip. We solicit orders from any company wishing to reduce the toll of corrosion to the minimum.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
Executive Offices:
230 Park Avenue, New York 17, N.Y.
Mills: Baltimore, Md.; Chicago, Ill.; Detroit,
Mich.; New Bedford, Mass.; Rome, N. Y.
Sales Offices in principal cities,
distributors everywhere

Listen to Exploring the Unknown on the Mutual Network every Sunday evening, 9 to 9:30 p.m., EST

MISSION TO TOKYO

(Continued from page 102)

I should not give a false impression by overdrawing this picture. Of course, the Japanese, for the most part, cannot be glad we are in their country as conquerors. But the worst elements seem to be respectful at least. It is surprising and fortunate that so many of them, in city and country, and especially the younger Japanese — those less than 30 years of age — seem responsive and even cheerful. I think the reasons include the following:

(a) The Japanese people are very disciplined and very

polite.

(b) The Emperor told them to co-operate in carrying

out the surrender terms.

(c) They have lived so long almost as serfs under a military feudal system that the change from one overlord to another or to a new set of rules is accepted as a matter of course.

(d) Mixed with an inferiority complex is a deep-seated admiration for many features of the western civilization.

(e) Very many of the best citizens have sincerely disapproved of the imperial policies of the last few decades and have resented the assumption of dictatorial power by the military clique but have been powerless to prevent it. These include many industrialists, scholars, and other educated people. They see in the present events the breaking of the iron grip of the military caste and a chance, if they co-operate well with us, of creating a new era for Japan, based on civil liberty and peaceable achievement.

In any case, those who are sincerely in this latter category should be encouraged, for they are the nucleus on

whom we must build if we are ever to get out of Japan without failure to achieve that for which we fought so long and expensively. Interpreting what I have seen and heard since our occupation, I judge that this is exactly MacArthur's policy and that he is going ahead with it just as fast as military security and public reaction permit. Of course, there remain some plotting Japanese who must be downed with an iron hand whenever detected. Our surest long-term antidote to them lies in backing their countrymen who sincerely wish to establish the policies which we can approve as leading to international harmony and humane internal conditions.

Our own Army and Navy occasionally had their difficulties in working together, but their differences were very minor indeed, whereas their co-operation was generally excellent. But in Japan the relation between army and navy was almost that of enemies. We asked a dozen different well-informed people, "How did the army and navy co-operate?" The answer was unanimous: They didn't. A top scientist-engineer said: "A general and an admiral would not shake hands even if that would win the war." Another replied by expressively wiggling his thumbs in opposite directions. Technically the navy was more advanced. Politically the army was in the driver's seat.

Similarly, Japan's army or navy utilized its civilian scientists only to a trivial extent and then under impossible restrictions of secrecy and suspicion. Said one scientist, "They treated us almost as if we were foreigners."

Said another: "We wanted to work for our country, but what could we do? They would ask us to develop a (Continued on page 116)





We held sort of a Town Meeting on Telephone Service We mailed questionnaires to a number of people who were waiting for home telephones and asked them how they felt about it.

Practically all understood the reasons for the shortage in telephone facilities and the big majority placed the responsibility for lack of service on the unavoidable circumstances of war.

More than 72% said the telephone company was doing all it could for them. More than 69% agreed they should be waiting their turns for service.

About 19% thought they

should have had telephones at once and 10% felt we could do more for them than we had. 18% thought others got telephones ahead of turn.

Of course, we are grateful to the majority for their good opinion, but we also respect the views of the minority who think otherwise.

We've turned the corner from war to peace and we're on our way to give service to all who want it.

In the next twelve months, we expect to install more telephones than there were in all of France and Belgium before the war.

BELL TELEPHONE SYSTEM



MISSION TO TOKYO

(Continued from page 114)

very sensitive radio amplifier, for example, but they would never tell us what it was to be used for or what it had to work with. All the parts were developed by different scientists in complete isolation and ignorance. Of course, when the parts were put together they would not work together as a system."

The reason for Japan's striking failure to utilize her topflight scientists effectively in the war effort could be pieced together with considerable certainty from the corroborating testimony of many witnesses. First in importance is undoubtedly the dictatorial attitude and self-confidence of the Japanese military leaders, whose attitude was reflected throughout their organization. In many cases the military technologists were not so highly trained as the civilian scientists. This state of affairs resulted in a tendency for the military personnel to maintain their positions and protect their reputations by avoiding frank discussion with the better trained civilian scientists of the universities and industrial companies.

Contributing also to the situation was the fact that, for the most part, the top Japanese scientists were educated in America or Europe, or had at least made frequent visits to these continents. They were therefore suspected of foreign connections and sympathies. Furthermore, through their foreign visits, they had a yardstick against which to measure Japan's policies and powers, and most of them realized only too well that the Japanese imperial policy was headed for catastrophe. As a group, therefore, the Japanese scholars were unsympathetic with their nation's war policies and hence were not trusted.

To some extent, this last comment is also true of the navy, whose officers had also seen the world and were not at all confident of the possibility of Japan's military success. The predominating army group on the other hand came from the peasant class and did not have much basis for international comparison. The average army man thought the textile mill, steel mill, or arsenal in his home town was the largest in the world, and his military ambition was therefore not tempered with wholesome caution.

How different are these relationships from the working partnership established between our Army and Navy, our industrial companies, and our civilian scientists under the O.S.R.D. In comparing the co-operation and the over-all effectiveness of the technological war effort of the United States and Great Britain with that of Germany and Japan, we are forcefully reminded that the democratic nations showed far greater initiative, co-operation, and efficiency than did our totalitarian, dictator-driven opponents. In their republican form of government, our democratic processes have stood the acid test of war; may they likewise stand up to the emergencies of reconversion to peace!

It would be improper to discuss here any technical war developments, but I think the proprieties would permit the following comments on Japan's progress in the two most important scientific developments of this war, the atomic bomb and radar.•

In common with up-to-date physicists of all nations, (Continued on page 118)





WINFIELD H. SMITH, Inc.

55 MAY STREET ... SPRINGVILLE .. ERIE COUNTY .. NEW YORK

Boost the Performance

OF YOUR EQUIPMENT with

RAYTHEON VOLTAGE STABILIZERS

THE PRECISION, accuracy and dependability of much electrical equipment are impaired by varying supply voltages.

If varying power supply handicaps your equipment why not install magnetic-type RAYTHEON VOLTAGE STABILIZERS? Long-proved, job-rated, and designed to meet practically any installation need, they are boosting performance in a wide variety of electrical equipment in many useful applications.

Get these principal operating advantages:

- Control of output voltage to within $\pm \frac{1}{2}\%$ of 115 or 230 V.
- Stabilization at any load within rated capacities.
- Quick response. Stabilizes varying input voltage within 1/20 second.
- Entirely automatic. No adjustments. No moving parts. No maintenance.

Read the complete story in our Bulletin DL48-537. Write for your copy today.



ELECTRICAL EQUIPMENT DIVISION
Excellence in Electronics



For Radio • Television • Communications
Radar • Motion Pictures Sound Recording
Electronic Devices • Constant Speed Motors
Production Machinery • Signal Systems
X-ray Equipment • Testing and Laboratory
Equipment.



MISSION TO TOKYO

(Continued from page 116)

Japanese physicists were aware of the theoretical possibility of producing atomic power. Some of them thought of the possibility of an atomic bomb, but their theoretical calculations mistakenly led them to conclude that the release of atomic energy could not be rapid enough to produce an explosion. Their mistake is not surprising, since the calculations involve concepts which make even Einstein's relativity theory look simple by comparison. But because of this error, the Japanese effort was directed at producing an atomic energy substitute for coal for power plant purposes. A laboratory apparatus was constructed on a small experimental scale, employing a principle for concentrating the desired Uranium 235 which would immediately occur to any competent physicist or physical chemist. But before any tests were made, the apparatus and its laboratory housing were completely destroyed in one of the bombing raids, and these facilities were never rebuilt. That, in brief, is Japan's progress in the field of atomic energy, insofar as we had ascertained when I left. For obvious reasons, no further work aimed at producing atomic energy is being permitted.

The development of our modern radar art, using microwaves, began almost exactly five years ago. Japan's most advanced radar sets are about three years behind ours in conception, and they are further behind in quality of design. Moreover, Japan could not possibly have gone into quantities of production comparable to our own even though an island empire has need for large numbers of radar outfits. Also her conception of the use of radar was quite limited. However, considering the paucity of qualified technical personnel, her development of radar was creditable and demonstrated some real ability.

We had one amusing experience while interrogating a group of 24 admirals and other naval officers on this subject. In advance, they had prepared for us a very full report, in English, on all their work in radar. This report gave the names of the personnel involved, the number of square feet of laboratory space devoted to each subject, the extent to which each laboratory was damaged by our bombing, full specifications of each radar set, and the stage of development, production, and use which had been reached on each project.

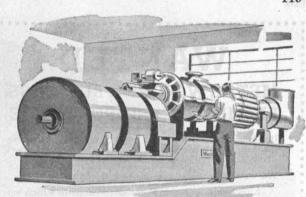
One of their sets, designed for navigational purposes in an airplane, was designated "Rotterdam Apparatus." We were interested in their use of this name for the following reason. In the winter of 1943–1944, our Eighth Air Force in England introduced very successfully the H₂S type of radar in its Pathfinder planes for leading the big bomber formations to their targets over Germany. These preliminary sets had been built in the M.I.T. Radiation Laboratory. Finally one of these Pathfinder planes was shot down, as it happened, over Rotterdam. Reports showed that the Germans were greatly excited over this radar set, which was of an entirely new type to them, and they named it the "Rotterdam Apparat."

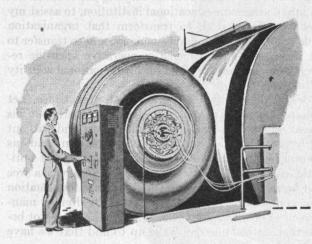
To our insistent questioning, the Japanese officers replied that they had received no plans or specifications of this apparatus from Germany and that they had designed their own Rotterdam apparatus before any German technicians reached Japan. When we pressed them still further as to how they came to use that name, they replied,

(Concluded on page 120)

In a laboratory a SCIENTIST experiments with a new gas turbine . . . using heat-resisting alloy blades that are far stronger, at 1100°F., than *ordinary* steel at room temperature.

... the name on the GAS TURBINE is Westinghouse.





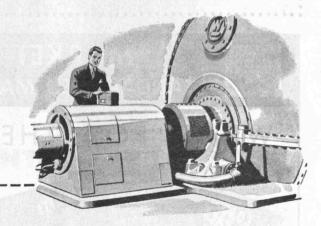
On a special machine a TESTER employs a Rototrol* for smoothly accelerating a large flywheel, used in determining the wearresisting qualities of tires and brakes for huge air transports of the future.

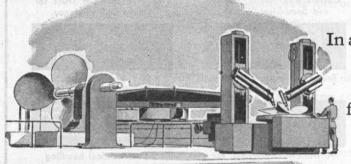
... the name on the ROTOTROL is Westinghouse.

*Registered Trademark

In a power plant an ENGINEER uses a Vibrograph to "take the pulse" of a turbogenerator . . . recording the smallest vibrations as a trace on a film.

... the name on the VIBROGRAPH is Westinghouse.





In a manufacturing plant an OPERATOR
uses an electronic control to regulate
the movement of milling cutters—
for accurately machining irregular contours on giant ship propellers.

...the name on the ELECTRONIC CONTROL is Westinghouse.



NOW THAT Westinghouse technical skill and "know-how" have turned from war to peace, expect great things... from Westinghouse research, engineering, and precision manufacture.

WANTED

METAL WORKING BUSINESS BY MERGER OR PURCHASE

It should be a business involving primarily the machining of medium and heavy castings, steel plate, etc.

We would consider any of the following:

- A business having modern plant into which we could move our present operation
- A business which could be moved into our present modern plant
- A business which now requires additional plant facilities so that both plants could be operated

We are now doing an annual business in the low seven figures in two successful lines which were established in 1914 and 1918. We have competent and aggressive management with excellent engineering and sales departments. We now occupy a fine plant which is almost entirely depreciated, so that we are in excellent position to sell our plant or to make a deal which would bring in additional lines.

It seems to us that our proposition might be particularly interesting to elderly or absentee owners, trustees of estates, or owner-managers who are looking forward to early retirement.

Reply to Box Z

THE TECHNOLOGY REVIEW Cambridge 39, Massachusetts

MISSION TO TOKYO

(Concluded from page 118)

"We understand that the Rotterdam apparatus is a German radar set something like that used by your Pathfinders. We were told about it in general terms by wireless from Germany." When we told them the true inside story of the Rotterdam apparatus, they had a good laugh on themselves.

As I conclude this rambling account of my mission to Tokyo, I am still one hour out from San Francisco and the good old U. S. A., and the C-54 is humming along on schedule. My companions of the mission are staying in Japan several weeks more to finish our assignment. I return to try to help M.I.T. in its very big job of reconversion into a peacetime educational institution, to assist my colleagues of O.S.R.D. to transform that organization quickly into only a strenuous memory, and to transfer to new permanent auspices such co-operative scientific research as should be carried on for future national security and welfare.

For one thing only I would make an urgent plea. Let us give General MacArthur a chance to work out his present difficult problems with full support and without interference. He has the feel of the situation, and his program has thus far succeeded beyond the most optimistic expectation. I hope that he may be given a free hand for at least a few months more because the situation is too complicated to be safely handled by divided management or conflicting policies. If we do this, I do not believe that we will one day wake up to find that we have lost the peace in Japan.



MARKET FORGE COMPANY STANDARDIZED MATERIALS HANDLING EQUIPMENT

WRITE FOR THESE NEW BULLETINS



George C. Glover '99 Nathaniel Warshaw '16 Leo M. Beckwith '35

LOAD-MOVERS
Bulletin No. 1001MH

Casters with Plastic, Rubber and Semi-Steel Wheels.

LOAD-PACS Bulletin No. 1002MH

Pre-assembled running gear for trucks.

LOAD-CARRIERS
Bulletin No. 1003MH

A truck — convertible for every purpose.

LOAD-VEYORS
Bulletin No. 1004MH

Light weight portable conveyor.

LOAD-LIFTS Bulletin No. 1005MH

The Hydraulic-Lift Truck for safety and efficiency.

LOAD-SKIDS Bulletin No. 1006MH

Skid platforms up to 20,000 lbs. capacity.

SEMI-SKIDS & JACKS Bulletin No. 1007MH

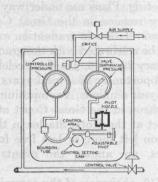
An economical handling system.

STANDARDIZED MATERIALS HANDLING EQUIPMENT Bulletin No. 1008MH

A condensed catalog.



ACCURATE PRESSURE CONTROL AT LOW COST





The Masoneilan No. 2500 Pressure Controller gives plants accurate, dependable instrument control at a price no greater and often at a lower cost than other less efficient methods.

Typical pressure control applications where these controllers are improving quality include—reducing service on primary or auxiliary steam lines, turbine or bleeder make-up, pump discharge pressure control, heating and evaporating systems. The No. 2500 is available for control of pressures between 30 inches vacuum and 500 pounds.

Masoneilan No. 2500 Pressure Controllers are rugged, simple and economical to operate. And although they are relatively inexpensive, they are built to the same high standards of quality materials as all other Masoneilan equipment. Bulletin 2500 gives the entire story. Write for your copy today.

MASON-NEILAN REGULATOR COMPANY

1190 ADAMS STREET, BOSTON 24, MASS., U.S.A.



Reg. U. S. Pat. Of

Samson Cordage Works

Boston 10, Mass.

Herbert G. Pratt, '85, Chairman of the Board

Manufacturers of braided cords of all kinds, including sash cord, clothes line, trolley cord, signal cord, shade cord, Venetian blind cord, awning line, etc., also polished cotton twines and specialties.

SPOT CORD





Our extra quality sash cord, distinguished at a glance by our trade-mark, the colored spots. Especially well known as the most durable material for hanging windows, for which use it has been specified by architects for more than half a century.

SIMPLEX-TIREX

Electric Welding Cables



... for shipyards, railroads, pipe lines and any construction or repairs where electric welding contributes to efficient production.

Subject to W.P.B. regulations

SIMPLEX WIRE & CABLE CO.

79 Sidney Street, Cambridge, Mass.

THE INSTITUTE GAZETTE

(Continued from page 112)

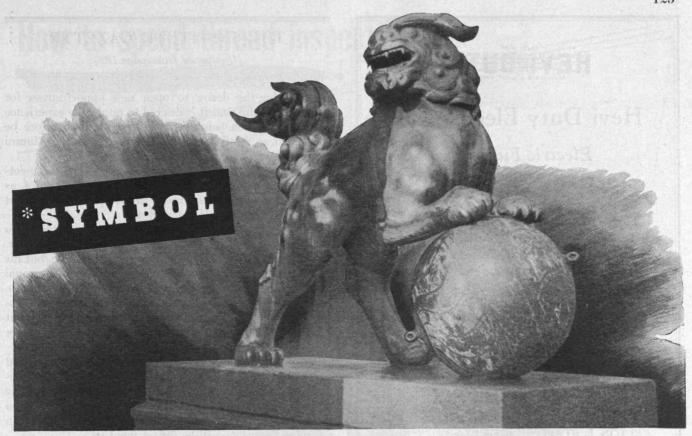
Stimulation

PENING the new season, the 246th meeting of the Alumni Council, held on October 29 with A. Warren Norton, '21, President, in the chair, probably established a record attendance with 157 members and guests present. So large was the attendance at this stimulating meeting that some who could not find tables in Pritchett Hall were served in the adjoining Silver Room and joined the larger group for the business portion of the meeting and a great amount of varied business was transacted. Introduced as new class representatives were Roderick L. Harris for the Class of 10-44 and Thomas A. Hewson for the Class of 1945. Undergraduate class presidents, Herbert J. Hansell, 2-46, Eugene M. Gettal, 10-46, and Robert W. Hanpeter, 2-47, were announced. Eighteen new club representatives and 25 alternates were named. Faculty members appointed during the year and introduced at the meeting included: Arthur T. Ippen, Associate Professor, and Clair N. Sawyer, Associate Professor, Department of Civil and Sanitary Engineering: *Professor Jacob P. Den Hartog and *Prescott A. Smith, '35, Assistant Professor, Department of Mechanical Engineering; *Roland B. Greeley, Assistant Professor, and *Homer Hoyt, Associate Professor, School of Architecture and Planning; Ivan A. Getting, '33, Associate Professor, *Harold I. Tarpley, Associate Professor, and *Godfrey T. Coate, '42, Assistant Professor, Department of Electrical Engineering; Professor William L. Campbell, '15, Department of Food Technology; *Richard H. Bolt, Assistant Professor, Department of Physics; Professor Lybrand P. Smith (U.S.N., retired), Department of Naval Architecture and Marine Engineering; Professor Kurt Lewin, Department of Economics and Social Science; *Major Alvin J. Brodeur, Assistant Professor, and Captain Hanssen Schenker, Assistant Professor, Department of Military Science and Tactics; and Professor William N. Locke, Department of Modern Languages.

Reports of officers and committees constituted the business portion of the meeting. Plans are under way for revival of the customary reunion in the Great Court in June, which will have no relation to graduation exercises since Alumni Day will be celebrated with the graduating Class of 2–46 on February 23, 1946. The June celebration will provide the first opportunity in several years for resuming customary five-year reunions. A symposium in the forenoon, a grand luncheon in the Great Court at noon, and an Alumni Banquet at the Hotel Statler in the evening, with the afternoon left more or less free for individual social activities, are among the events being planned.

Frederick Bernard, '17, chairman of the committee to nominate representatives of local associations, stated that the committee had adopted the policy of nominating younger men to fill vacancies and had accumulated a sizeable list of potential candidates. Mr. Bernard also proposed changes in representatives for local associations and moved the formal election of those nominated. The motion was voted affirmatively. The committee's policy was

(Continued on page 124)



FIDELITY Machines

make a wide variety

of small tubular knitted constructions
— economically . .

*

Pot cleaners, strainers, filter bags — knit from copper or steel!

These are but a few of the many different articles, besides hosiery, made on FIDELITY Knitting Machines from all the other textile fibers as well. Covers are knit for rayon cheeses in process, as are covers to protect delicate parts in shipment or from the action of moisture or fumes. Soldiers in the tropics are protected from disease-spreading insects by cotton

arm tubing. All knit fast and economically on FIDELITY basic knitting machines.

Half a hundred patents are included in the remarkable developments and basic improvements which mark the thirty-four years of progress in this one field by FIDELITY—progress that is laden with promise of still more improvements for your advantage.

Small tubular knitting machines are but one example of the many precision machines made by FIDELITY. Some of these are described in an illustrated 48-page book. Write for your copy.

,

* Ancient bronze lion in front of the Alfred O. Deshong Museum, Chester, Pa.—considered one of the finest examples in North America of this form of early Chinese art. It symbolizes fidelity and steadfastness.

PRECISION MACHINES

FIDELITY MACHINE COMPANY



3908-18 FRANKFORD AVENUE, PHILADELPHIA 24, PA.



Hevi Duty Electric Co.

Electric Furnaces
MILWAUKEE, WISCONSIN

Hevi Duty Precision Electric Heat Treating Furnaces are built in a large variety of types and sizes — for many heat treating operations — with temperature ranges to 2500° F. (1371° C.). They are standard production equipment in many national industrial plants.

Write for descriptive bulletins

HAROLD E. KOCH '22, President

GEORGE A. CHUTTER '21, Vice President

ELTON E. STAPLES '26, On Leave, U. S. Army

BRUNO H. WERRA '32, Director of Research

BATH
IRON WORKS
CORPORATION

Shipbuilders and Engineers

BATH, MAINE

THE INSTITUTE GAZETTE

(Continued from page 122)

inspired by the desire to open new opportunities for younger Alumni, but it is desired to retain the experience of the older men being replaced, who will therefore be continued as regular guests at meetings of the Alumni Council.

At the conclusion of the business portion of the meeting, President Norton introduced C. Frank Allen, '72, as the oldest member present and called upon the youngest

member, Thomas A. Hewson, 6-45.

Next to be introduced was President Compton, who spoke on "Mission to Tokyo." The major portion of Dr. Compton's talk is included elsewhere in this issue, but his extemporaneous remarks included a number of personal anecdotes not recorded in the written article. One of these concerned a young Japanese naval officer who spoke excellent English and served as an interpreter. It turned out that this officer had attended the Institute shortly before the war with Japan.

Edward L. Moreland, '07, Dean of Engineering, and Dr. Compton obtained leaves of absence from the Institute for the duration and for six months, respectively. The sudden termination of the war permitted Dr. Compton to serve for the duration, while it appears that Dean

Moreland's service will be for six months.

The surrender of the Japanese made it necessary to organize a scientific mission with the objective of locating laboratories and scientific personnel to determine what progress the Japanese had made in war research. In this project, alumni records from the Institute and a number of other educational institutions enabled the members of Dr. Compton's group to locate key scientific personnel in Japan, some of whom Dr. Compton had known personally. Co-operation of Japanese scientists was wholehearted and made the task somewhat easier.

Japanese scientists criticized the conduct of Japan's war and particularly the lack of co-operation between the army and navy. Much jealousy existed between these two services, and both held scientists in distrust not only because their training was usually better than that of the men in Japan's armed forces but also because scientists had travelled and knew Japan's comparative economic and military position quite well. There was a total lack of co-ordination between the work of one group of scientists and that of another, largely because of the suspicions and

(Continued on page 126)

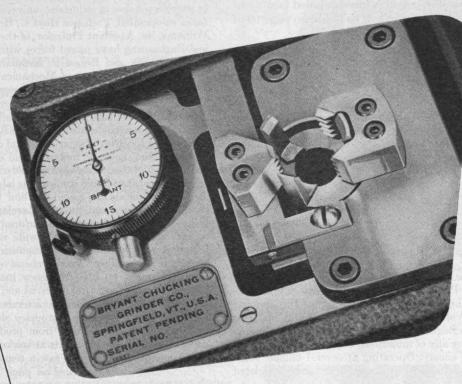
J. C. CORRIGAN CO.

Conveyers

Engineers • Manufacturers • Erectors Coal Handling Systems Materials Handling Equipment

Distributors for
Jeffrey Manufacturing Co.
Jeffrey Parts Carried in Boston Stock

41 Norwood Street, Boston, Mass. Tel. GENeva 0800 How to speed thread inspection . .



Bryant Thread Gages

This new Bryant Thread Gage Catalog describes all the advantages of these unusual gages . . . it tells how you can inspect internally and externally threaded of these unusual gages . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four or five times faster . . . it tells how threaded parts can be inspected all over in the parts four faster all over in the parts faster all over in

send the coupon i

BRYANT

CHUCKING GRINDER CO.

SPRINGFIELD, VERMONT, U. S. A.



BRYANT CHUCKING GRINDER CO. Springfield, Vermont, U. S. A.

Please send me Catalog No. G3 which gives complete details on the Bryant Thread Gages

NAME____TITLE___

COMPANY

CITY____STATE____

THE INSTITUTE GAZETTE

(Continued from page 124)

mistrust with which military personnel regarded scientifically trained personnel. Not much evidence could be found that the Japanese had made any progress in the utilization of atomic energy because their early calculations had been misinterpreted. A more detailed treatment of President Compton's report will be found on page 99 of this issue.

President's Report

(Continued from page 109)

The Cyclotron. Under Professor Robley D. Evans, the M.I.T. cyclotron was one of the few in America to remain in operation. The staffs of most of the others were diverted to the development of radar and the atomic bomb. Operated on day-and-night shifts, this instrument provided radioactive tracer materials for a wide variety of war projects in metallurgy, medicine, and chemical warfare. Most significant was the use of such materials in the development of methods for preserving whole blood and standardizing the product. In this important contribution to the great blood-donor program, Professor Evans and his colleagues were part of a team including medical specialists from Harvard University, the Massachusetts General Hospital, and other institutions.

The High-Voltage Laboratory. Headed by Robert J. Van de Graaff, Associate Professor of Physics, in association with William W. Buechner, '35, Assistant Professor of Physics, and others, the High-Voltage Laboratory designed and built for the Navy five superhigh-voltage x-ray outfits for examination of castings and especially of munitions, both our own and those captured from the enemy. Operating at several million volts, with literally a pin-point focal spot, reliable and easily regulated

over a wide range of operating conditions, these instruments proved exceedingly effective and won high praise from the naval officer in charge, himself a distinguished scientist and expert in this field. They represent a peak of achievement in securing penetrating x-ray pictures of sharp definition and high resolving power both in angle and in depth.

Fuel Research. The most significant work in fuels was the investigation of the thermodynamic properties and combustion characteristics of new fuels designed for special purposes. The work was part of a large program of development of such fuels, in which a number of industrial, university, and service laboratories co-operated. Professor Heyt C. Hottel, '24, and Glenn C. Williams, '42, Assistant Professor, of the Department of Chemical Engineering have joined forces with Professor C. Richard Soderberg, '20, and Ernest P. Neumann, '38, Assistant Professor, of the Department of Mechanical Engineering in working on fuels and related problems of combustion.

The Laboratory for Insulation Research. One of the busiest groups at the Institute has been the staff of the Laboratory for Insulation Research, headed by Arthur R. von Hippel, Associate Professor of Electrical Engineering, and devoted to the study of insulating and dielectric materials and especially their characteristics in high-frequency electric fields. In addition to carrying on fundamental scientific studies, this laboratory developed new dielectric materials and found out how to secure the optimum results from older materials. It developed a complete set of techniques and equipment for performing all significant tests on insulating materials under a wide variety of conditions of temperature, moisture, and composition. As a co-operative service, it has produced a comprehensive and widely circulated summary report on high-frequency insulating materials submitted by many industrial concerns and other agencies.

Liquid Oxygen. Submarines, aircraft crews, hospitals, and welders need oxygen. The customary shipment of compressed or liquefied oxygen in tanks from production plants in large cities does not serve the needs at sea or in distant theaters of war. Consequently this war saw a remarkable advance in the

(Continued on page 128)



PRECISION-GAUGED HAIRSPRINGS

PRECISION PRODUCTS COMPANY
WALTHAM, MASSACHUSETTS

ROBERT I. BRADLEY '20

- STEEL

HOT AND COLD ROLLED

DEFORMED BARS FOR CONCRETE

Stahleker Steel Corp.

Second and Binney Sts., Kendall Sq., Cambridge, Mass.

Telephone Trowbridge 1440
WALLACE BLANCHARD, '16, Treasurer

JOHN T. KILEY '18

ALBERT J. KILEY '21

JAMES A. KILEY COMPANY

SOMERVILLE, MASSACHUSETTS

PUBLIC UTILITY BODIES

and

ASSOCIATED EQUIPMENT



TELEPHONE GAS
ELECTRIC LIGHT
and POWER

PENFLEXWELD

is a Versatile High-Pressure,

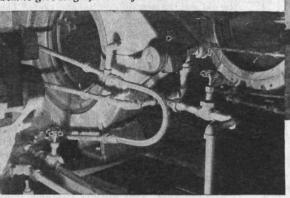
Corrugated Tubing

... designed for a wide variety of applications in industrial plants

PENFLEXWELD Tubing is invaluable in handling volatiles, liquids and gases with penetrative or solvent characteristics. Its corrugated construction expands and contracts with temperature alternations, provides extreme flexibility and resists bursting, crushing, cracking and splitting. Its jointless length is seep-proof under practically all conditions of pressure and temperature.

PENFLEXWELD Tubing available with standard braiding and protective sleeve types. End fittings, Solseal for general use where temperatures do not exceed 250° F and Metseal for higher temperatures, provide a complete assembly of leak-proof, long-lasting service on split molds, platen presses, compressors, furnace doors, open hearth furnaces and many other installations. Write for Bulletin 90 C, describing sizes 5/32" to 2" I.D. and special literature on larger sizes.

> Below-Split molds of the tire vulcanizing type are often equipped with PENFLEXWELD to enable them to give longer, trouble-free service.





Vibratory motion on refrigeration compressors

is isolated at its source by short lengths of

Open hearth operation requires tubing that resists extremes of temperature. PENFLEXWELD is designed to do that kind of job. Arrow points to 4" PENFLEX Interlocked Hose on high-pressure steam line.

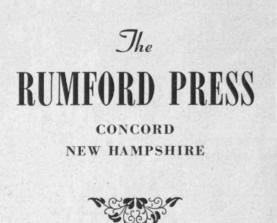


7211 POWERS LANE

PHILADELPHIA 42, PA.









rinting IS STILL A CRAFT

THE INSTITUTE GAZETTE

(Continued from page 126)

efficiency of oxygen production and in transportation of it by lightweight portable units. To these developments, Professor Frederick G. Keyes of the Department of Chemistry and Samuel C. Collins, Associate Professor in the Department of Mechanical Engineering, made very important contributions.

Here again, war developments may lead to important industrial applications, and we are prepared both in the Department of Chemistry and in the Department of Mechanical Engineering to take advantage of the new art developed during the war. In the latter Department, for example, we are establishing a program in cryogenic engineering under the direction of Professor Collins.

The C. W. S. Development Laboratory. The Chemical Warfare Service Development Laboratory represents a different type of M.I.T. contribution to the war effort. With its Edgewood Arsenal greatly overcrowded, the C. W. S. urgently needed another laboratory for research and development work. It learned that M.I.T. had architects' plans already drawn for a new chemical engineering laboratory, for which the plans to raise funds had been interrupted by the war. At the request of the C. W. S., the Institute proceeded to build this laboratory at its own expense and then to turn it over to the C. W. S. for operation under a contract providing for maintenance expenses plus a fee for use and special services. The net result was that the C. W. S. was thereby enabled to expand its research activities, while the Institute was justified in proceeding with the construction of the building, soon to be freed for our own use.

The Wind Tunnel. All through the war the Wright Brothers Wind Tunnel has been operating on a two-shift basis in the testing of models of military airplanes in co-operation with the principal aircraft manufacturers. The continuous use of the tunnel on confidential work has not permitted use of it as a laboratory for student instruction. However, the tunnel has trained many engineers for the design and operation of other wind tunnels, such as those at the Boeing Aircraft Company and at the research division of the United Aircraft Corporation. From the latter company nine engineers were sent to the Wright Brothers Wind Tunnel during the war for six months' training periods. With the ending of the war, the tunnel will be used extensively for instruction and thesis work of both our undergraduate and

our graduate students.

The Center of Analysis. A similar service function has been rendered all through the war by the group which operates both the old and the new differential analyzers.2 They have computed the range tables for the new naval guns and ammunition as well as performed many other computational services for various war agencies. Antenna patterns, characteristics of wave propagation and absorption, and determination of statistical correlation coefficients are some of the other computing jobs quickly performed by the various automatic calculating devices developed and operated by this group, headed by Richard Taylor, '34, Assistant Professor, in the absence of Samuel H. Caldwell, '25, Associate Professor of Electrical Engineering, and by their colleagues from several departments. The war gave great impetus to further developments in machine calculation, and as a consequence we have opportunities in this field of a magnitude beyond anything we have yet undertaken.

Miscellaneous. This already overlong report omits a great many significant contributions to the war by the M.I.T. staff and laboratories. Development and evaluation of methods of

(Concluded on page 130)

¹ An illustrated report on the C. W. S. Development Laboratory is contained on pages 103 to 106 of this issue.

² The differential analyzer was described under the title, "Educated Machinery," by Samuel H. Caldwell, on pages 31 to 34 of the November, 1945, issue of The Review.



here's what

we want to know!"

The big day when you finally get this beautiful button from Uncle Sam will come sooner or later, and when it does, you want to know the answers to many questions.

You want the "ungarbled word" in easy-to-read form, on the G. I. Bill of Rights, your National Service Life Insurance, how the job situation stacks up, and a lot more.

That is, you want all this dope if you're like the several hundred thousand other servicemen who've already been sent our little booklet, "Information for Veterans," during the past year. They have asked for it from all over the world, from every fighting front.

NEW ENGLAND MUTUAL

Life Insurance Company

Now that the job is done, they read it all the more eagerly while they are "sweating out" the wait for their return home. If you are a parent, wife or relative of a soon-to-be veteran, we shall be happy to provide a booklet for you to forward. If you are an officer who would like a supply for his unit, just name the quantity.

Address us at 501 Boylston St., Boston 17, Mass. We'll do the rest.

HERE'S
WHAT'S
IN IT:

THE FIRST MUTUAL LIFE INSURA COMPANY CHARTERED IN AMERICA — I

Highlights of the "G. I. Bill of Rights"— How to continue your education, guidance on loans, benefits, etc.

Your National Service Life Insurance— How to keep it in force, how to reinstate, and convert, with rates.

The word on — Mustering-out pay, pension privileges, hospitalization, vocational training, Federal income tax, etc.

What kind of a post-war job?—Earning a living in America and where you fit in the picture.

New England Mutual Life Insurance Company of Boston

George Willard Smith, President Agencies in Principal Cities Coast to Coast
The First Mutual Life Insurance Company Chartered in America—1835

These Massachusetts Institute of Technology-and hundreds of other college men, represent New England Mutual:

Raymond P. Miller, '18....Salem

Arthur C. Kenison, '19.... Boston

Blaylock Atherton, '24.... Nashua

It won't be long now before you'll need an

OVERCOAT

Harris Tweed with Plaid Lining \$59.50

Shetland Tweed \$50 and \$59.50

Mt. Rock Fleece \$55

Winter-tex Fleece \$45

RAINCOATS

London Weatherproofs Cotton Gabardine, Plaid Lining, Medium Tan \$16.50

Zelan Treated Cotton Gabardine, Plaid Lining, Light Tan \$16.50

THE COOP

Harvard Square Store

THE INSTITUTE GAZETTE

(Concluded from page 128)

long-range weather forecasting, improvement of aircraft engines, special missiles, silent weapons, surgical sutures, synthetic vitamins, synthetic rubber, flame throwers and incendiaries, testing of textiles and parachute cord, study and handling of labor relations for industry and government, new alloys, military food processing and packaging, rations, optical materials, medicinal materials, new methods for extraction of metals from ores, emergency housing, explosives, remarkable applications of flash photography, camouflage, standardization of fuses, and an enormous amount of technical consultation—these are some of Technology's other war activities.

WHERE IS THE LONG HAIR?

(Concluded from page 108)

period of the landings on Sicily and Italy. These are but a few instances; there are many others as striking and as instructive.

What is the lesson to be drawn from these examples? It is not that the pure scientist should forthwith desert the laboratory and become an engineer, an administrator, or a tactician. Who then would do the research? There will not be enough scientists in the postwar world to carry on the research necessary to keep this country wealthy, happy, and prepared, and it certainly would not be wise for many of them to migrate to other fields. Pure scientists have no monopoly on administrative ability or on practical common sense. All that these examples point out is that they are not deficient in these qualities.

What does seem to be indicated, however, is that in this present era of science the jobs of engineering, administration, and military planning require a broad scientific background of knowledge which many engineers, administrators, and military officers have not had and that it was easier in some cases for the scientists to pick up the special tricks of application than it was for the other men to pick up the scientific background in a hurry. The moral to be drawn concerning the training of engineers, industrial and governmental administrators, and regular military officers is obvious. The experience of this war has been that a scientific approach to a practical problem produces rich dividends and that scientific training cannot be quickly acquired.

Another lesson might be mentioned here. There are immense unexplored possibilities of applying scientific methods to the improvement of operations of peace in a manner analogous to the techniques used by operations research groups in improving operations of war. Any operational research worker can see as many chances for improving railroad operations, for instance, as there were for improving strategic bombing operations. Merchandising and municipal government seem to be other obvious fields for the application of these scientific techniques.

Still another lesson is even now being pondered by our legislative bodies. Rapid advance of science and its applications takes place only where there is no coercion of activity and when there is free interchange of ideas on an international scale. The more rapidly national restrictions and suspicions can be eliminated, the faster can scientific method play its part in waging peace.

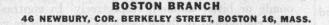


CLOTHINGS Men's Furnishings, Hats & Shoes

346 MADISON AVENUE COR. FORTY-FOURTH ST. NEW YORK 17, N.Y.

Our New Christmas Book

If you will write to our New York store, Madison Avenue, corner 44th Street (346 Madison Avenue, New York 17, N. Y.) we shall be glad to send you a copy of our new 1945 Christmas Book — illustrating and describing hundreds of good-looking, useful Gifts for Men and Boys . . . Shop early, whether by mail or in person, to make certain of the best selections and most timely deliveries.





Now in the Second Quarter of our SECOND CENTURY, 1818-1945 AS CIVILIAN, MILITARY AND SPORTING

Air Conditioning Design - 2

Question: If conditioned air is supplied in constant volume through a grille, why does the air travel vary?

Answer: Cold air is dense and falls quickly to the breathing level; warm air travels farther.

Modulating control of air temperature makes variation in travel less noticeable, and prevents alternate warm and cold periods. Our systems are always installed with modulating controls.

HAROLD J. RYAN, INC.

101 Park Avenue

New York 17, N. Y.

WILLIAM D. NEUBERG COMPANY



GRAYBAR BUILDING . 420 LEXINGTON AVE. NEW YORK 17 N. Y

TELEPHONE LEXINGTON 2-3324







Transits and Levels are used on all largest works and by U.S. Govt. for utmost precision. Rental Insts. New catalog, just issued, sent gratis. A souvenir plumb-bob sent for 3¢ postage. Boston 30, Mass.

BUFF & BUFF CO. Henry A. Buff '05

PERSONAL RESEARCH into the future leads to life insurance as the solution to freedom from want

STANLEY W. TURNER '22



former student of M. I. T. will be glad to give you the facts.

Telephone CAPitol 0456 or address 30 State Street, Boston, Mass.

PROVIDENT MUTUAL LIFE INSURANCE COMPANY

OF PHILADELPHIA, PENNSYLVANIA

Industrial & Scenic

MOTION PICTURES

PRODUCED BY

F. S. LINCOLN

Write for Information 114 E. 32nd ST., NEW YORK 16, N. Y.

William H. Coburn, '11

William F. Dean, '17

William H. Coburn & Co.

INVESTMENT COUNSEL

68 Devonshire St. Boston, Mass.

THE TREND OF AFFAIRS

(Continued from page 97)

From the elementary nature of the four true taste sensations, it is apparent that the limitless delicate nuances of flavor which contribute so importantly to human enjoyment must be credited largely to the odor component of flavor. The complexity of odors is borne out by the limited success of all attempts so far to classify odor sensations. In the absence of satisfactory nomenclature, odors are usually described by likening them to known substances, saying "that smells like onions" or "this has a fishy odor" and so on. Odors, like tastes, have reciprocally additive and subtractive effects and also enter into synergistic relationships with the true taste sensations. Thus we like to experience the "flavor" of vanilla, which is purely an odor, in company with the taste of sweet. Salt on grapefruit not only replaces sugar for avoirdupoisconscious consumers but also is favored by others because they feel that salt enhances the characteristic odor-flavor of this fruit. Chefs commonly use small amounts of sugar to accentuate flavors of savory dishes.

The four true tastes are liked by almost everyone, provided they are experienced in suitable concentrations and combinations. Even sour and bitter, which at first blush have unpleasant connotations, are relished in a tangy lemonade or bitter almond, respectively. In contrast, the odor component of flavor, with its many and as yet not satisfactorily classified ramifications, offers perhaps as wide a field for individual preferences as does the sensation of color. A recent experimental survey of odor preferences showed, first of all, that individual likes and dislikes varied greatly, underlining the necessity for manufacturers concerned with flavors or odors to use large and representative groups of subjects in testing acceptability of proposed formulas. This study, using one of the arbitrary odor classifications just mentioned, found that a test group, including both sexes and a wide range of ages, had majority preferences for the "flowery" odors, rose and violet; the "fruity" odors, orange, lemon, pineapple, peach, apple, strawberry, and raspberry; the 'spicy" odors, cinnamon, chocolate, vanilla, wintergreen, and peppermint; the "resinous" odors, balsam and pine; and the "burnt" odor, coffee. On the other hand, majority aversions were recorded for the "fruity" odors, olive oil and vinegar, and the "putrid" odors, onion, garlic, sauerkraut, fish, and lard.

(Concluded on page 134)

PILOT MANUFACTURING COMPANY

Engineering · Designing

Pilot Production Experimental Machine Work Mechanical and Electronic Instruments Special Machinery

Bulletin Available of Services and Facilities

WILLIAM E. BURNS M.I.T. '37

47 HANOVER STREET, BOSTON 13

Tel. CAP 4931

KENmore 0119

KENmore 0120

HARTY-BLANEY CONSTRUCTION CO.

25 Huntington Avenue

Boston

Massachusetts

Walter C. Blaney

John J. Harty '13

THE MURRAY PRINTING COMPANY

A Complete Printing Organization

Letterpress :: Offset Binding

18 AMES STREET CAMBRIDGE

POST-WAR PLANS

As Regards Service -

More than ever you will need BLUEPRINT, OFFSET and PHOTOPRINT service commensurate with the split-second tempo of your office.

ELECTRO SUN COMPANY established its reputation 38 years ago, by catering to engineers, architects, individual and commercial establishments.

You get what you want on time—economically, efficiently and cheerfully.

ELECTRO SUN CO., Inc., NEW YORK, N. Y.
PHOTO LITHOGRAPHS • BLUEPRINTS • PHOTO COPIES • LITHOPRINTS

161 WASHINGTON STREET GRAND CENTRAL TERMINAL BLDG.

BArclay 7:2334 MUrray Hill 6-6526

A. L. WEIL '01

J. C. DUFF '86

McCREERY and THERIAULT

Building Construction

126 NEWBURY STREET

BOSTON, MASS.

THE TREND OF AFFAIRS

(Concluded from page 132)

A feature of this study which is valuable to those wishing to design products for flavor or odor appeal to specific segments of the population is a tabulation of findings by sex and age classifications. Females showed a marked differential liking for certain of the fruity and spicy odors. With the exception of a male preference for the odor of smoked meats, the remaining odor likes were well balanced between the sexes. In the age comparison, older people showed relative preferences for the odors of violet, honey, smoked meats, and onion. The youngsters, contrariwise, favored chocolate and sarsaparilla. One might theorize here on the effect of training upon flavor preferences; perhaps the liking for such a highly artificial flavor as that of smoked meats must be learned. In this connection, it is also interesting to recall a previously advanced suggestion that some juvenile feeding problems may be due to a relatively keener flavor sense possessed by youngsters. The dulling effect upon flavor perception of the adult practice of tobacco smoking and continued consumption of highly seasoned foods has been established.

The study dealt with each odor separately. Obviously all of the odors disliked alone are highly prized as components, in small concentrations, of the flavor of prepared dishes. The fact that a small degree of rancidity is acknowledged to be a normal and desirable part of the flavor of peanut butter is striking proof of the ancillary value of flavors unpleasant in themselves.

Electronic Warfare

FOLLOWING a statement by Vannevar Bush, '16, that "the new eyes which radar has supplied can sometimes be blinded by new scientific developments," a report released by the Joint Board on Scientific Information Policy, entitled *Electronic Warfare* — A Report on Radar

MONSANTO CHEMICAL COMPANY

Merrimac Division

EVERETT MASSACHUSETTS

The largest and oldest chemical manufacturer in New England Countermeasures, outlines developments which have been made to minimize the effectiveness of enemy radar.

The radar countermeasures were recently demonstrated at the Radio Research Laboratory, operated during the war at Harvard University under the direction of Frederick E. Terman, '24.

Radar methods have four fundamental weaknesses which have been successfully exploited in outwitting German and Japanese radar developments. A radar station employs a powerful radio transmitter, signals from which can be heard at a considerable distance beyond that for which the system is effective for locating ships or aircraft. The location of radar stations, like that of any radio transmitter can be determined by means of radio direction finders. Since the radar signal reflected from most targets is very weak, a low-power transmitter may be employed to transmit a jamming signal to obliterate true radar indications. Such transmitters may be located at the target whose position is desired or at a convenient ground station. Radar systems are unable to distinguish readily between actual targets and free-falling strips of tin foil, particularly when cut into strips of suitable length.

The first two disadvantages have been employed in locating enemy radar stations by reconnaissance planes and ground stations operating at distances beyond that for which their presence can be detected by radar.

Jamming of, or interfering with, radar signals by transmitting a blanketing signal of "noise" has been used as a powerful method of making enemy radar detection methods ineffective. A number of jamming stations were established secretly in France before the Normandy invasion and proved of great assistance in confusing the Germans during actual invasion operations.

Finally, the use of strips of metal foil dropped from planes has been used to provide false echo signals from which the enemy would gather erroneous or useless information. Rolls of tin-foil strip, 400 feet long, or bundles of folded tin-foil strips, half a wavelength long, dropped from planes, produce an effective "smoke screen" which made enemy radar of little value. Each two-ounce bundle of tin foil produced about the same signal as three bombers.

LEONARD CONSTRUCTION COMPANY

Engineers and Contractors
SINCE 1905

IN ALL THE AMERICAS AND FAR EAST

37 South Wabash Ave. 420 Lexington Ave. Chicago New York City

Ingenerios S.A. de C.V., Mexico

PREPARATORY SCHOOLS FOR BOYS

CHAUNCY HALL SCHOOL

Founded 1828. The School that confines itself exclusively to the preparation of students for the Massachusetts Institute of Technology.

FRANKLIN T. KURT, Principal 553 Boylston Str

HUNTINGTON SCHOOL FOR BOYS

Four forms beginning with 9th grade.
Thorough preparation for entrance to M.I.T.
and other technical schools.
Regular and summer courses.

553 Boylston Street, Boston, Mass. 320 Huntington Ave., Boston Tel.

Tel. Kenmore 1800

PROFESSIONAL CARDS

JACKSON & MORELAND

Engineers

Public Utilities — Industrials Railroad Electrification Design and Supervision - Valuations Economic and Operating Reports

BOSTON

NEW YORK

H. K. BARROWS, '95

M. Am. Soc. C. E

CONSULTING HYDRAULIC ENGINEER

Hydro-electric Developments - Water Supplies. Reports, Plans, Supervision. Advice, Appraisals.

6 BEACON STREET

BOSTON, MASS.

Eadie, Freund and Campbell CONSULTING ENGINEERS

500 FIFTH AVENUE

NEW YORK 18, N. Y.

Plans and Specifications - Examinations and Reports Power, Heating, Ventilating, Electric, Plumbing, Sprinkler, Refrigerating, Elevator Installations, etc., in Buildings and Industrial Plants

J. K. CAMPBELL, M. I. T. '11

STARKWEATHER ENGINEERING CO.

INCORPORATED

Engineers and Contractors for Pumping Plants Boiler and Power Plants, Cooling Water and Heat Recovery Systems

246 Walnut Street, Newtonville

BIGelow 8042

Wm. G. Starkweather, M.E. Cornell '92

J. B. Starkweather, B.S. M.I.T. '21

H. A. KULJIAN & CO.

CONSULTANTS ' ENGINEERS ' CONSTRUCTORS

Specialists in

UTILITY, INDUSTRIAL and CHEMICAL FIELDS

1518 WALNUT STREET

PHILADELPHIA, PA.

H. A. KULJIAN '19

FABRIC RESEARCH LABORATORIES

INCORPORATED

Research, Testing and Consulting for Textile and Allied Industries

665 Boylston Street

Boston, Mass.

W. J. HAMBURGER, '21

K. R. Fox, '40 E. R. KASWELL, '39

GILBERT ASSOCIATES, INC.

ENGINEERS AND CONSULTANTS

Allen W. Reid '12

Malcom G. Davis '25

F. E. Drake '05

Steam, Hydro, Diesel Power Plants; Industrial Structures; Plant Safety, Labor Relations, Utility Rates, Valuations, Reports; Large Scale Purchasing; Industrial Laboratory

New York 61 Broadway

Reading, Pa. 412 Washington St.

Washington Nat'l Press Bldg.

FAY, SPOFFORD & THORNDIKE

Engineers

Airports - Bridges - Water Supply and Sewerage Port and Terminal Works - Fire Prevention

INVESTIGATIONS

BOSTON

SUPERVISION OF CONSTRUCTION

New York

WALLACE CLARK & COMPANY

Consulting Management Engineers **SINCE 1920**

Planning for Research and Development, Sales, Engineering, Production, Finance, Industrial Relations, Overall Management

521 FIFTH AVENUE

NEW YORK 17, N. Y.

Literature on Request

MAURICE A. REIDY

Consulting Engineer

BRIDGES

BUILDINGS FOUNDATIONS

STRUCTURAL DESIGNS

CONSTRUCTION CONSULTANT AND ARCHITECTURAL ENGINEER Estimates and Appraisals

101 TREMONT STREET

BOSTON, MASS.

THE COSMA LABORATORIES CO.

1545 East 18th Street

Cleveland 14, Ohio

Chemical Analysis — Testing — Consulting Engineering Testimony and Research

H. SEYMOUR COLTON, M.I.T. '21 Director

R. W. FRISCHMUTH, Case '38 Assistant Director

Moran, Proctor, Freeman & Mueser CONSULTING ENGINEERS

420 LEXINGTON AVENUE

NEW YORK 17, N. Y.

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, Design and Supervision.

Pardo, Proctor, Freeman & Mueser Ingenieros Consultores Ap. Correos 614, Caracas, Venezuela

WILLIAM H. MUESER, '22 GEORGE T. GILMAN, '23

PALMER RUSSELL CO.

Realtors

Real Estate Brokers

Property Management

Appraisals and Mortgages

1320 BEACON STREET Edgar P. Palmer '25

BROOKLINE, MASS. William W. Russell '22

FRANK MASSA

Electro-Acoustic Consultant

DEVELOPMENT - PRODUCTION DESIGN - PATENT ADVISOR

Loud Speakers - Microphones - Sound Powered Telephones Supersonic Generators and Receivers Electro-Acoustic Instruments Underwater Sound

3393 DELLWOOD ROAD

CLEVELAND HEIGHTS, OHIO

AREA PLACEMENT CHAIRMEN FOR MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Each man listed below will have information about positions for M. I. T. Graduates who want to locate in his particular area

ALABAMA

PRESCOTT V. KELLY '13, Brown-Marx Company, Brown-Marx Building, Birmingham 3

ARKANSAS

LESLIE A. JACKSON '19, Manager Little Rock Municipal Water System, Little Rock

CALIFORNIA

A. B. Court '10, Russ Building, 235 Montgomery Street, San Francisco

FORD W. SAMMIS '28, 433 South Spring Street, Los Angeles 13

ALFRED E. PERLMAN '23, Denver and Rio Grande Western Railroad Company, Denver 1

CONNECTICUT

FREDERICK W. GREEN '32, Nash Engineering Company, Wilson Avenue, South Norwalk (Bridgeport area) GEORGE L. MYLCHREEST '10, 238 Palm Street, Hartford

CHARLES E. SMITH '00, Railroad Office Building, New Haven

DISTRICT OF COLUMBIA

Major Harry H. Fisk '22, 4351 Fessenden Street, N. W., Washington 15, D. C.

George W. Simons '15, Hildebrandt Building, Jacksonville CLARENCE P. THAYER '23, 4212 N. W. Sixth Avenue, Miami Franklin O. Adams '07, 305 Morgan Street, Tampa

WILLIAM E. HUGER '22, 11 Marietta Street, N. W., Atlanta 1

EDWARD F. ABBOTT, JR. '31, Birtman Electric Company, 4140 West Fullerton Parkway, Chicago

FRANK C. BALKE '14, Balke and Krauss Company, 427 West Market Street, Indianapolis

KANSAS

FRED C. KOCH '22, Winkler-Koch Engineering Co., 335 West Lewis Street, Wichita

KENTUCKY

TINSLEY W. RUCKER III '31, The Crescent Panel Company, 32d and Market Streets, Louisville 12

LOUISIANA

THEODORE O. HOTARD '12, 221 Pelican Avenue, New Orleans 14

FRANK A. KNIGHT '38, Eastern Corporation, Bangor LEWIS D. NISBET '09, 44 Montrose Avenue, Portland

MARYLAND

GEORGE W. SPAULDING '21, 1605 Lexington Building, Baltimore 1

MASSACHUSETTS

ROBERT F. BURNETT '10, 85 North Main Street, Fall River A. RUSSELL PIERCE, JR. '81, Palmer Scott Boatyard, New Bedford LYNN WETHERILL '25, High Voltage Bushing Engineering Division, General Electric Company, 100 Woodlawn Avenue, Pittsfield WILLIAM WILDER '98, 4 Dayton Place, Worcester

ALLYNE C. LITCHFIELD '17, U. S Rubber Company, 6600 East Jefferson Avenue, Detroit 32

MINNESOTA

LELAND CLAPPER '09, 5600 London Road, Duluth CHARLES W. DREW '19, 200 Hawthorne Road, Interlachen Park, Hopkins (Minneapolis area)

MISSOURI

HARRY L. HAVENS '09, Havens Structural Steel Company, 1713 Crystal, Kansas City

WESLEY W. WEDEMEYER '30, William Wedemeyer and Son, Architects, Wainwright Building, 705 Chestnut, St. Louis

MONTANA

WALTER R. C. RUSSERT '18, Anaconda Copper Company, Butte

Louis A. Metz '23, Ceco Steel Products Co., 1141 North 11th Street, Omaha

NEW HAMPSHIRE

CARL A. HALL '08, Hall Bros. Company, Concord

NEW JERSEY

GEORGE A. CHUTTER '21, 109 Central Avenue, Glen Rock (Newark area)

ANDREW F. ALLEN '12, State Department of Health, Albany THOMAS H. SPELLER '29, General Engineering Company, 785

Hertel Avenue, Buffalo 7

John C. Fruit '02, Equitable Life Insurance Society of U. S.,

393 7th Avenue, New York 1 RAYMOND G. BROWN '16, Comstock and Wescott Inc., Niagara Falls C. King Crofton '22, 1132 Lincoln-Alliance Bank Building, Rochester

THERON C. JOHNSON '33, General Electric Company, 1 River Road, Schenectady 5

J. MURRAY HASTINGS '13, 606 Hills Building, Syracuse

JAMES B. HOLDEN '30, 276 Sundale Road, Akron KENNETH A. WRIGHT '19, Johnson Service Company, 1905 Dunlap

Street, Cincinnati 14
CHARLES B. ROWLEY '12, Charles Bacon Rowley and Associates,

Keith Building, Cleveland
JAMES H. BLODGETT '20, Superintendent, Division of Sewage Treatment, Columbus

EUGENE HERZOG '27, 26 Cliff Street, Dayton

CHARLTON P. WHITTIER '27, Owens-Illinois Glass Company, P. O. Box 1035, Toledo 1

OKLAHOMA

W. J. Sherry '21, 804 Kennedy Building, Tulsa

ROBERT E. CUSHMAN '06, 618 N. W. Front Street, Portland 9

PENNSYLVANIA

Percy Tillson '06, 3003 North Front Street, Harrisburg Edward J. Healy '23, Philadelphia Brewing Company, 6th and Clearfield Streets, Philadelphia 33 HAROLD L. LANG '09, Carnegie Institute of Technology, Pitts-

burgh 13 G. C. Wilson '15, 907 East King Street, Lancaster ROBERT FAULKNER '04, Gravel Hill, Schaefferstown

Louis Morse '96, York Corporation, Roosevelt Avenue, York

RHODE ISLAND

DONALD G. ROBBINS '07, c/o International Braid Company, 47 Charles Street, Providence

TENNESSEE

DANA M. WOOD '06, 619 Union Building, TVA, Knoxville DONALD W. SOUTHGATE '11, Nashville Trust Building, Nashville 3

JONATHAN A. NOYES '12, 4848 Northwest Highway, Dallas Joe McEvoy, McGowan Avenue, Houston

GEORGE M. GADSBY '09, Utah Power and Light, Kearns Building, Salt Lake City

VIRGINIA

JOHN STACK '28, N.A.C.A., Langley Field, Newport News DONALD N. FRAZIER '11, 1226 Mutual Building, Richmond

HOLLAND H. HOUSTON '24, 215 Fifth Street, Olympia (Seattle area) HOMER C. BENDER '09, 921 East 19th Street, Spokane

WISCONSIN

PHILIP N. CRISTAL '17, 720 East Wisconsin Avenue, Milwaukee 2

TECHNOLOGY MEN IN ACTION

THE ALUMNI FUND - ITS PROBLEMS AND GROWTH

Progress Report

The SIXTH YEAR of our annual program of giving to the Institute is now in its last phase. Mid-November found us well along toward our goals of 10,000 contributors and \$150,000. By the 16th of November, 8,649 Alumni had contributed a total of \$123,476.27—an average gift of \$14.30. On both scores, these figures were increases over the previous year. In 1944, at this same time, there were 8,508 contributors. The increase in number of givers was therefore slight, only a little over 100. In the amount given, however, the differential was much greater, over \$12,300—11 per cent better.

At the very beginning, the decision was made to allow our gifts to accumulate until the total reached sizable proportions. It was felt that only in this way could it be of maximum effectiveness. In the Fifth Annual Report it was announced that the total, as of March 31, 1945, was in excess of a quarter of a million dollars. Present indications are that that figure will be increased 40 per cent by the end of next March.

How will this money be used? No decision has yet been made by the Fund Board, other than the basic principle that it is for capital purposes only, not for annual recurring operating expenses. Conditions change. What is number one priority today may be satisfied or superseded by tomorrow. As a consequence, the Board has felt it unwise to tie itself down. The needs of the Institute, however, are many and varied. It may be taken for granted that when our accumulated gift is expended it will be to satisfy an urgent need, and in such a manner as to make the Institute an even better place for those who follow us.

M.I.T. MEN AT WAR

Up to November 19 over 8,856 Institute Alumni, including 35 Admirals, 8 Commodores, and 95 Generals, were recorded as being in the active naval or military services of the United Nations. Among the new promotions to be reported are Brig. Gen. Cornelius E. Ryan '27, Brig. Gen. Alfred A. Kessler, Jr., '32, and Brig. Gen. Alfred R. Maxwell '40. There were 244 Alumni who had been decorated, and 155 who had made the supreme sacrifice.

With its issue dated November, 1942, The Technology Review began publishing "M.I.T. MEN AT WAR." Although hostilities have ended, The Review plans to continue this page for the next several months in order to record information on M.I.T. men in the services which, to date, has been impossible to obtain. As a matter of convenience, promotions and corrections in the rank previously given are grouped under a single heading, "Changes in Rank." The Review Editors are greatly indebted to the many Alumni and other readers who are continuing to co-operate so helpfully in reporting inevitable errors of omission and commission which they note in these listings.

	NEW DECORATIONS	1935	Bemis, Hal L., Lt. Col., U.S.A., Bronze Star; Oak Leaf Cluster	1943 2-44	Maroni, Jacques R., S.2c. Barclay, Ralph G., R.T.3c.	T	THE NETHERLANDS
1905	Furer, Julius A., Rear Adm., U.S.N., Legion of Merit. Wood, John E., Brig. Gen., U.S.A., Silver Star — for gal-		to Legion of Merit; Croix de Guerre with Palm.		Fike, Irwin F., Lt. Comdr. Maier, Hanns J., S.1c.		R.N.A.F.
1914	Wood, John E., Brig. Gen.,		Besson, Frank S. Jr. Brig. Gen.	6-45	Taft, Caleb S., Ens.	2-47	Otten, Jan D., A.C.
	lantry in action in Italy; Le-	1936	U.S.A., Legion of Merit. Creasy, William M., Jr., Col., U.S.A., Legion of Merit — for	0-40	Baldwin, Robert D., Jr., Ens. Berry, Frank R., Jr., S.1c.		NORWAY
	gion of Merit — for exception- ally meritorious conduct in		U.S.A., Legion of Merit — for performance as deputy com-		Birnbaum, Harold, Mid. Buckley, William H., A.R.T.2c. Buckwalter, Robert C., R.T.3c.		
1017	Italy. Collins, Hubert W., Col., U.S.A.,		mander of Services of Supply in China.		Buckwalter, Robert C., R.T.3c. Chien, Luther C., S.2c.		R.N.A.F.
1014	Bronze Star; Croix de Guerre. Groves, Leslie R., Jr., Maj. Gen.,	1937	Chatfield, Miles B., Lt. Col.,		Clift, Giles D., Lt.	10-44	Osen, Knut B., Capt.
	U.S.A., Distinguished Service	1938	Chatfield, Miles B., Lt. Col., U.S.A., Legion of Merit. Mehren, Bernard W., 2nd Lt.,		Corbett, Clifton W., Ens. Cubberley, Calvin P., R.T.3c.	(CHANGES IN RANK
1020	Medal.		U.S.A., Air Medal — for meritorious achievement in aerial		Cubberley, Calvin P., R.T.3c. Di Savino, Sabino C., Mid. Driscoll, Paul J., Jr., Lt. (j.g.)		U.S.A.
1020	Pennoyer, Frederick W., Jr., Rear Adm., U.S.N., Legion of		combat flight over the North-	10 1		1017	
1921	Merit. Newman, James B., Jr., Brig.		ern Kuriles. Mitchell. Donald G., Maj.,		Goodman, Thomas P., S.1c. Gustafson, Wesley C., A.R.T.3c. Holmes, Joseph C., S.1c.	1917	Hegenberger, Albert F., Brig. Gen. to Maj. Gen.
	Newman, James B., Jr., Brig. Gen., U.S.A., Distinguished Service Medal.		Mitchell, Donald G., Maj., U.S.A., Bronze Star — for ex- pediting supply and equipment		Holmes, Joseph C., S.1c. Landon, Richard W., Lt.	1922	Buell, Raymon C., Lt. Col. to Col.
1922	Brokaw, Charles E., Col., U.S.A.,		of units during the invasion of		Malloy, Edwin, Jr., Lt.		Hoge, William M., Brig. Gen. to Maj. Gen.
	Air Medal with Bronze Star — Mindanao.		the continent. Welling, Alvin C., Col., U.S.A., Oak Leaf Cluster to Legion of		Malloy, Edwin, Jr., Lt. Martin, William G., Jr., S.1c. Nebel, Walter R., A.S. Owen, David J. Mid.		Sucher, Jacob G., Maj. to Lt. Col.
	Browning, Albert J., Brig. Gen., U.S.A., Distinguished Service		Oak Leaf Cluster to Legion of Merit.		Owen, David J., Mid. Pond, James C., Mid. Rice, Ned C., Jr., A.C. Russo, Luigi J., Ens.		Thomas, Earl R., Lt. Col. to Col. Warren, Ross B., Lt. Col. to Col.
	Medal.	1939	Leghorn, Richard S., Lt. Col., U.S.A., Croix de Guerre with		Rice, Ned C., Jr., A.C.	1923 1924	Warren, Ross B., Lt. Col. to Col. Studier, Rene R., Capt. to Col. Maynard, Perry C., Lt. Col. to
	Dimmick, Henry S., Lt. Col., U.S.A., Bronze Star. Warren, Ross B., Col., U.S.A.,		Palm — for photographing the		Scheinman, Arnold H., Ens.		Col.
	Croix de Guerre with Palm.		French coast line at 1500 feet; 7 Oak Leaf Clusters to Air		Schwab, Peter V., S.1c. Stoops, Reginald B., R.T.3c.	1925	Oetinger, George, Jr., Maj. to Lt. Col.
1923	Covell, William E. R., Maj. Gen., U.S.A., Distinguished Service	1940	Medal; Silver Star. Burr, Henry A., Maj., U.S.A.,		Strobino, Frank L., Ens. Sundback, Richard R., S.1c.	1926	Gleason, Isaac W., Maj. to Lt.
	Medal with Oak Leaf Cluster.	1940	Bronze Star.		Umberger, Grant, Ens.	1927	Ryan, Cornelius E., Maj. to
	Ovenshine, Richard P., Col., U.S.A., Legion of Merit. Randall, Russell E., Brig. Gen.,		Dickson, John R. V., Col., U.S.A., Distinguished Service Medal.		Wiggin, Rollin H., Jr., S.1c. Zimmermann, Carl K., S.1c.	1930	Brig. Gen. Ferrier, Leslie H., Lt. to Capt.
	Randall, Russell E., Brig. Gen., U.S.A., Distinguished Service	1942	Bennett, Carter L., Comdr., U.S.N., Legion of Merit with	2-46	Adams Robert M Ir RT 3c		Kenyon, John H., Capt. to Lt.
	Medal — for services as com-		Bronze Star; Navy Cross with		Gaul, Richard F., S.1c. Gilleland, Guy W., Jr., S.1c. Guditz, Elis A., Ens.	1931 1932	Metcalf, William, 1st Lt. to Capt. Huessener, Richard, Corp. to
	manding general of the West China Raiders.		Gold Star. Leghorn, Kenneth M., Maj.,		Gilleland, Guy W., Jr., S.Ic. Guditz, Elis A., Ens.	1902	a .
1924	Correale, William H., Maj., U.S.A., Bronze Star.		U.S.A., Distinguished Flying Cross; Air Medal with Oak		Farker, David L., Jr., F.1C.		Sgt. Kelton, John T., Maj. to Lt. Col. Kessler, Alfred A., Jr., Maj. to Brig. Gen. Nordlinger, Samuel G., Maj. to
	McSherry, Frank J., Brig. Gen.,		Leaf Cluster.	0.40	Wilson, Arthur J., Jr., R.T.3c. Wise, William T., A.R.T.3c.		Brig. Gen.
	U.S.A., Distinguished Service Medal; Bronze Star — for the		McGinnis, Carl L., Lt. (j.g.), U.S.N., Distinguished Flying	6-46	McDonell, Duncan F., S.1c. Morely, Joseph A., E.M.1c.	(150)	Lt. Cot.
	operations of the Civil Affairs Administration in liberated		Cross.		Morely, Joseph A., E.M.1c. Negus, Alan G., Mid. Silver, Bayer J., A.S.	1933	Clark, Ellery D., Lt. to Capt. Ludlam, Douglas G., Maj. to Col.
	countries of Europe and the military government of Ger-		Wells, Jackson B., Jr., 2nd Lt., U.S.A., Air Medal with 6 Oak	2-47	Muir, James M., Jr., A.M.M.lc.	1934	Ludlam, Douglas G., Maj. to Col. Booth, Louis S., Corp. to M. Sgt.
	many.	2-44	Leaf Clusters. West, Alden A., Lt., U.S.A., Distinguished Flying Cross;		Sutton, John G., Jr., S.1c. Trimble, Russell F., Jr., S.1c.		Carten, Leo A., Maj. to Lt. Col. Hayden, Thomas M., Capt. to
	Stevenson, Thomas T., Col., U.S.A., Distinguished Service		Distinguished Flying Cross; Air Medal with 4 Oak Leaf		Turkington, Robert E., S.2c. Wood, Russell K., S.1c.		Maj. Montant, Louis T., Jr., Lt. to
1925	Medal. Holman, Jonathan L., Brig. Gen.,		Clusters.			1935	Capt. Hakala, Ephraim O., Pvt. to
1000	U.S.A., Distinguished Service		NEW LISTINGS	10.1	U.S.M.C.	9111	S.Sgt. Pflanz, Louis W., Jr., Capt. to
1926	Medal. Gleason, Isaac W., Lt. Col.,		leader of the book	6-45	Tsai, Donald H., Pvt.	7.00	Maj.
	Gleason, Isaac W., Lt. Col., U.S.A., Legion of Merit— for services while in charge of	1921	*Starck, Carl W., 1st Lt.		BRAZIL	1937	Arabian, Karekin G., Capt. to Maj.
	telephone and telegraph com-	1922	Ely, Hiram B., Lt. Col.		Navy		Bunker, William B., Lt. Col. to Col.
	munications in the Mediterra- nean Theater of Operations.	1936 1938	Sullivan, John E., Lt. Hardman, Alan F., Capt. Rush, Clarence W., Capt.	6-45	Fontes Ferreira, Carlos A. L., Lt.	THE	Fischel, J. Robert, Maj. to Lt.
	Roberts, Ralph H., Capt., U.S.N., Legion of Merit.	1940	Rush, Clarence W., Capt. Gladstone, Richard E., Pvt.				Col. Tank, Charles F., Lt. Col. to Col. Johnson, Robert L., Capt. to
1927	Cuthbertson, Harry B., Lt. Col., U.S.A., Croix de Guerre with	1942	Rutan, Robert W., Lt.		CANADA	1938	Johnson, Robert L., Capt. to
	Gold Star.	1943	Torrey, Bradford M., Capt. Bennett, David N., 2nd Lt.		R.C.N.V.R.		Maj. Mitchell, Donald G., Capt. to
	Wellings, Augustus J., Commo., U.S.N., Legion of Merit.	2-44	Englund, Sven W., Pvt. Landau, Jean-Claude C., T.5.	1909	Millard, Reginald W., Lt. Comdr.		Maj. Saunders, Harry O., Jr., Lt. to
1929	*Kiefer, Dixie, Commo., U.S.N., Silver Star.		Momose, Kiyohiro T., Pvt. Kase, Paul G., Jr., Pvt.		R.C.E.	1939	Capt. Dadakis, George S., Capt. to Maj.
1930	Kenyon, John H., Lt. Col.,	6-45	Fisher, Hyman W., Pvt.	1930	MacDougall, Cedric H., Capt.	1940	Jaffe, Herbert, 2nd Lt. to 1st Lt. Bristor, Charles L., Lt. to Maj.
	U.S.A., Legion of Merit — for exceptionally meritorious serv-		Highton, Alexander A., 2nd Lt. Morrison, John D. P., Lt.			1940	Dishman, Addison V., Lt. to
	ices in Italy. Moriaty, John D., Lt. Col.,		Steinberger, Jack, Pvt. Telesca, Donato R., 2nd Lt.		CHINA		Col. Mathews, Elmo S., Lt. Col. to Col.
	U.S.A., Bronze Star — for	2-46	McNearney, Thomas O., Jr., Pvt. Smith, Ira B., Pvt.		Army		Maxwell, Alfred R., Col. to Brig.
	meritorious achievement in operations against the enemy	10-46	Axtell, James C., Pvt.	6-45	Wu, Cheng Jao, Capt.	1941	Pratt, Charles H., Jr., Maj. to
1932	in Mindanao. Renshaw, Clarence, Jr., Col.,		Przedpelski, Tadeusz A., Pvt.		GREAT BRITAIN		Lt. Col. Wallace, John F., 2nd Lt. to Capt.
1934	U.S.A., Legion of Merit.		U.S.N.		Army	1942	Jones, Jack J., Capt. to Maj. Lumbert, Allyn R., 1st Lt. to
1004	U.S.A., Croix de Guerre with Gold Star — liberation of	1931	Wye, James A., Lt.	1931	Vivian, G. Hugh, Capt.		Capt.
	France.	1933 1935	Gardner, Percy S., Jr., Lt. Greene, Frank B., Lt.	1991			Capt. Muir, William C., Corp. to Sgt. Rosett, Louis K., Capt. to Maj. Smith, Edward W., Jr., 2nd Lt.
	Moody, Robert L., Maj., U.S.A., Croix de Guerre with Silver Star	1936 1939	Tichnor, Harry N., Sp.2c. Buffum, William W., Jr., Sp.1c.		GUATEMALA		to 18t Lt.
	— for exceptional service in the liberation of France; Bronze	1940	De Felice, Frank, Lt. Eaton, John A., S.1c.		Army	1943	Steele, Charles B., Capt. to Maj.
	Star with Oak Leaf Cluster.	1941	Staros, Basil, Lt. (j.g.)	6-45	Yurrita, Gonzalo, Maj.	2010	Capt.

1936 Devine, Warren R., Lt. (j.g.) to Lt. Comdr. Jenks, Frank, Ens. to Lt. (j.g.) Valtz, John A., Lt. to Lt. Comdr. Nieder, Bailey H., 2nd Lt. to 1st Peakes, Edmund W., Mid. to GREAT BRITAIN Ens. Plaut, Arthur, Jr., A.S. to Ens. Pressey, Donald R., Mid. to Ens. Sluis, Joost, S.2c. to R.T.2c. Lt. 2-44 Banus, Mario D., Pvt. to 3nd Lt. Bromfield, Burton A., T.4 to W.O.(j.g.) Brown, Steven H., Sgt. to T.Sgt. Seferian, Ralph, Pvt. to T.5. 10-44 Hollander, Stanley N., Pvt. to Lt. LaRue, John P., Pfc. to Sgt. Means, Max F., Pvt. to Lt. Parmelee, George K., Pfc. to Corp. Saxenian, Hrand, Pfc. to S.Sgt. Taylor, James T., Lt. to Capt. 6-45 Corp. Surchfield, David J., Pfc. to Corp. Navv 1942 Bruckmann, Paul M. W., S. Lt. 1937 Brettman, Herman, Ens. to Lt. Thomas, Charles S., Jr., Lt. to Lt. Comdr. (j.g.) Ewald, George W., Lt. to Lt. Comdr. Healey, Charles F., Ens. to Lt. Peters, Philip H., Ens. to Lt. (j.g.) RANKS NOT Wilkinson, Roland F., Mid. to PREVIOUSLY PUBLISHED Young, Robert M., Pho.M.3c. to Pho.M.2c. U.S.N. Brown, David, Ens. to Lt. Innes, Frederic R., Lt. to Lt. Comdr. Baum, Richard V., S.1c. to A.R.T.3c. 2-44 Salisbury, DeRoss, Jr., Ens. 10-44 Brindis, Leslie M., Ens. Krulee, Gilbert K., Ens. Lester, Joseph T., Ens. 6-45 Symonette, Robert H., Rd.M.3c. 2-46 Fuller, Frisbee J., S.2c. Dudley, David D., S.1c. to R.T.2c. Kunnle, Lewis B., R.T.3c. to R.T.2c. Kyllonen, Toivo V., Lt. to Lt. Comdr. 1941 Engelman, Richard H., Lt. to Lt. Comdr. U.S.N. McDonald, James E., Ens. to Erb, Donald R., Ens. to Lt. (j.g.) Fleet, John P., Lt. (j.g.) to Lt. Comdr. 1917 Ewan, Charles M., Lt. Comdr. to Comdr. Lt. (j.g.) Reed, Elliott W., Jr., A.C. to Ens. GREECE 1921 Johnston, S. Paul, Lt. Comdr. to Comdr. Rowell, Fred M., Lt. to Lt. Comdr. Owen, Nathan R., Ens. to Lt. Roe, Kenneth A., Lt. to Lt. Comdr. Whitmore, Donald S., R.T.3c. to R.T.2c. Navy 10-44 Antoniadis, Panayottis D., O.S. Campbell, Robert J., S.1c. to M.M.3c. Jones, Roderick B., Lt. Comdr. to Comdr. Travers, Frank J., Lt. to Lt. Comdr. Skowronek, Lester J., Lt. to Lt. Comdr. Thompson, Raymond W., Jr., Lt. to Lt. Comdr. 1923 Jackman, William L., S.2c. to LIBERATED PRISONERS U.S.A. Bennett, Carter L., Lt. Comdr. to Comdr. Kinert, David F., Lt. Comdr. to Comdr. Sandt, Robert E., Ens. to Lt. Slack, Leslie M., Lt. Comdr. to Comdr. 1924 Mountjoy, Joseph P., Lt. to Lt. Comdr. U.S.C.G. 1940 Farrell, Walter H., Lt. - Japan. 1925 Vose, William C., Lt. Comdr. to 1935 Walters, Frank S., Ens. to Lt. Capt. CASUALTIES U.S.A. — Devantave, Belgium. 1907 *Godfrey, Stuart C., Brig. Gen., U.S.A. — plane crash. 1921 *Starck, Carl W., 1st Lt., U.S.A. 1929 *Kiefer, Dixie, Commo., U.S.N. — plane crash. 1935 *Dove, Paul W., Capt., U.S.A. — while being transferred to Japan as a prisoner of war. 1942 *Penn, Leo H., Capt., U.S.A. — plane crash. 1943 †Spear, Ernest M., Lt., U.S.A. 2-44 *Manson, Wallace J., 2nd Lt., U.S.A. — Laon, France. 10-44 *Freund, Walter J., Jr., Sgt., U.S.A. — Devantave, Belgium. Brunner, Loren E., Lt. to Comdr. Goat, W. Richard, Cadet to Ens. Cumming, Laurence G., Lt. Comdr. to Comdr. Edwards, Willard E., Lt. to Lt. 1926 1943 Coughanour, Leslie W., Ens. to Comdr. Wilson, Richard W., Lt. to Lt. Comdr. Dartsch, Frederick A. L., Lt. Comdr. to Comdr. Stover, C. Jack, Lt. to Lt. Comdr. U.S.M.C. Lt. (j.g.) Geyer, Lewis H., Ens. to Lt. (j.g.) 1928 Bartlett, Ralph W., Sgt. to G.Sgt. 1924 Anderson, Harry L., Jr., T.Sgt. to M.T.Sgt. 2-44 Hedgecock, Russell H., Lt. to Lt. Comdr. 1932 10-44 Ehrat, Alfred J., O.C. to 2nd Lt. Gordon, Philip D., Pvt. to T.4. Murchison, Clinton W., Jr., Pvt. Rockett, John A., S.1c. to R.T.2c. Brooke, Russell J., Lt. Comdr. to Comdr. 10-44 Helve, John H., Mid. to Ens. Mohrey, Raymond T., S.2c. to R.T.3c. Mooney, David A., Lt. Comdr. to Comdr. to Lt. Dee, Leo H., Lt. (j.g.) to Lt. Comdr. Niederberger, Robert B., Mid. to 6-45 Haines, Samuel E., Jr., Pvt. to

* Died or Killed in Service

** Wounded

Famed "Capt. Dixie" is victim of Plane Crash

‡ Prisoner of War

Having survived 65 shrapnel wounds in the naval battle off Formosa when his carrier, the famous U.S.S. Ticonderoga, was struck by Japanese suicide planes, the popular and able Commodore Dixie Kiefer '29 was killed November 12, when a Navy plane crashed on Mount Beacon in the state of New York. At the time of his death, he was commanding officer of the First Naval District air bases, stationed at the Quonset Naval Air Station in Rhode Island.

† Missing in Action

* Killed in Action

Commodore Kiefer, earlier in the war, was executive officer of the U.S.S. Yorktown and was awarded the Distinguished Service Medal after the Battle of the Coral Sea and the Navy Cross for heroism when the U.S.S. Yorktown was sunk

at Midway. He also had been awarded the Purple Heart and the Silver Star.

One time in commenting on an arm injury received while serving on the Ticonderoga, Kiefer is reputed to have said, "That's nothing at all. I'm a professional man, just paying back the United States for a marvelous education (Ed. note: Annapolis and M.I.T.) and 30 years' steady employment at a good job and good pay. I'm not like the reserves who volunteered to go to war with far less training. There's nothing heroic about us regulars."

His men on the *Ticonderoga* used to say, "He has so much metal in him that the ship's compass follows him when he walks across the deck."

ALUMNI AND OFFICERS IN THE NEWS

The Chosen Few

■ Louis S. Cates '02, elected president of the American Institute of Mining

and Metallurgical Engineers.

■ Edward L. Moreland'07, appointed chairman of the ordnance advisory committee of the American Institute of Electrical Engineers.

■ ROBERT E. WATERMAN'21, elected chairman of the North Jersey section of the American Chemical Society.

I EARL H. EACKER'22, chosen a director of the American Gas Association. TRUMAN S. GRAY'29, appointed chairman of the committee on instruments and measurements of the American Institute of Electrical Engineers.

■ MARGARET L. MURRAY'43, made health education secretary and acting executive secretary of the Cambridge Tuberculosis and Health Association.

Discourse

■ By Murray H. Mellish'10, who served on November 7 as chairman of a joint meeting of the hydraulics and sanitary sections of the Boston So-

ciety of Civil Engineers.

I By Harold B. Richmond 14, among the speakers at an educational conference on "Instrumentation and the University," sponsored by the Carnegie Institute of Technology and the Instrument Society of America at Pittsburgh on October 16 to 18.

■ By Thomas S. Holden'16, who on October 8 gave the third in a series of 15 lectures on home planning in Bridgeport, Conn., before members of the Home Planners Institute. His topic was "Selecting the Architect and

Contractor.

■ By Joseph S. Newell'19, who spoke before the designers' section of the Boston Society of Civil Engineers on November 14 about "Some Problems in the Analysis of Aircraft Struc-

■ By Marion S. Dimmock '22, who talked on Palestine and its problems at the October 14 service of the Youth Fellowship at St. Mark's Methodist Church at Staten Island, N.Y.

■ By Ellwood A. Church'27, one of three speakers on November 13 before the Boston section of the American Institute of Electrical Engineers on "110 KV. Oil-Filled Tie Cable — Mystic Station to Woburn.'

■ By John E. Nichols'32, who spoke on October 16 before the Parent-Teachers Association of Bridgeport, Conn., on "Elementary School Architecture.

■ By Albert C. Hall'37, who on

November 16 addressed the Boston section of the Institute of Radio Engineers on "Application of Circuit Theory to the Design of Servomecha-

■ By Peter E. Kyle'39, who served as chairman of a meeting of the Boston section of the American Welding Society on November 5 at the Engineers Club.

Publication

■ For Thomas C. Desmond'09, of "Lawmakers Anonymous" in This Month, December.

I For BERTRAM E. WARREN'24, of "Absorption Displacement in X-ray Diffraction by Cylindrical Samples' in the Journal of Applied Physics,

¶ For Henry C. Gunning '26, as coauthor, of "Geology of the Sullivan Mine" in the Canadian Mining and Metallurgical Bulletin, October.

I For F. Rolf Morral'32, of "Heat Treating Diagrams — S or TTT-Curves" in Metal Progress, October; "Employee Selection in the Metallurgical Industry' in Wire, February, "Surface Treatment for Metals" in Wire, April; "Molten Baths for the Wire Industry," Part I, in Wire, October; and "A Chronology of Wire and Wire Products' in Wire, November.

¶ For Ralph D. Bennett, staff, of "Engineers and Scientists in Government Service" in Electrical Engineering,

November.

■ For W. RUPERT MACLAURIN, staff, of "The Organization of Research in the Radio Industry after the War" in Proceedings of the Institute of Radio Engineers, September.

Book Reviews

■ For Richard H. Frazier '23, author of Elementary Electric-Circuit Theory, published by McGraw-Hill Book Com-

I For ARTHUR E. FITZGERALD'31, author of Basic Electrical Engineering -Circuits, Machines, Electronics, published by McGraw-Hill Book Com-

DEATHS

- * Mentioned in class notes.
- WALDO E. BUCK'76, spring, 1945.
- ¶ Byron E. Higgins'77, July 25.* ■ Frank T. Hopkins '77, July 25.*
- ¶ Louis P. Howe'79, in 1944. ¶ Henry A. Howard '86, February. ROBERT E. ANDERSON'87, August 8.
- I Frank M. Ladd'88, June 8.

- LUTHER W. BRIDGES'89, April 14.* I Joseph E. Chandler'89, August
- ¶ Paul R. Hawkins'89, August 27.* I Jacob W. Manning '89, October 29.
- WILLIAM E. MOTT'89, October 5. ¶ James J. Welch'91, October 26.
- HENRY DISSTON'96, August 29.* ALBERT D. HATFIELD'96, January.
- ¶ Fred E. Busby '97, June 13.*
- SYLVESTER Q. CANNON'99, May 29,
- DWIGHT FARNUM '99, June 5.*
- ¶ Harold S. Conant'00, January,
- HORTENSE W. LEWIS '00, February
- Mary P. Anderson'01, March 8.* ¶ Roy H. Bolster '01, September 8,
- CARL R. HALLSTROM'01, September 29, 1942.
- I HORACE E. HILDRETH'01, November 7.
- I HENRY C. FIELD '04, October 25.
- Frances R. Kilham'04, September
- ¶ Edward H. Metcalf '04, July 15.
- WILLIAM W. AMMEN'05, September
- ¶ Max Cline '05, July 26.*
- ARTHUR T. HOOVEN'05, July 8.*
- MITCHELL MACKIE'05, June 21.* ¶ James H. Tebbets '05, June 12.*
- ¶ Albert O. True'05, March 9.*
- I SAMUEL E. GIDEON '06, August 13. ■ HERBERT D. McKibben '06, March
- STUART C. GODFREY'07, October
- JOHN W. WOODRUFF'07, July 25,
- CLIFFORD H. BOYLSTON '08, October
- ¶ Philip W. Taylor '10, October 21.* ALANSON L. PALMER'11, January
- HARRY E. PRENTICE'13, September 7, 1944.
- STANLEY H. ROOD'14, October 27. ALFRED F. Nye'15, May 14.*
- ALFRED A. ELLSWORTH'20, May
- Monroe Shakespeare'20, August
- L. Winslow Emerson '22, October 25.
- [James W. Lowry'25, September
- ¶ Leland M. Burr, Jr., '32, January
- HARRY K. DAGHLIAN, Jr., '42, September 15.
- Paul G. Nelson, 2–44, January 5.* RICHARD H. BRESLER, 10-44, July 8.

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Southeastern M.I.T. Association

On October 26 the Association met for luncheon in the Colonial Room of the Tutwiler Hotel for the purpose of honoring Dr. Mead and Dr. Harrison of the Institute, who were in Birmingham for the fall meeting of the Southern Research Institute

of Birmingham.

Dr. Harrison delighted the membership with a very thorough, although condensed, description of the conditions which prevailed during the war years among the Faculty, the student body, and the Institute as an institution. Dr. Mead assumed the role of critic, although also a delighted listener to Dr. Harrison's descriptions, subsequently augmenting the latter's remarks with observations more in keeping with the point of view of the geologist than with that of a physicist. Since these two gentlemen had to take the same train shortly after the close of the luncheon for their return to Cambridge, they allowed no really serious controversy to arise between them in their report of events at the Institute, although no one present could fail to note that the one was definitely a physicist, and a good one, and the other a

geologist, and also a good one.

Alumni present on this occasion were the following: Julian E. Adler'13, James P. Barnes'05, Oaklee E. Charlton'24, Edward D. Early '24, Douglas F. Elliott '24, George J. Fertig '24, William H. Hassinger, Jr., '27, Margaret MacCormack Jones '43, Prescott V. Kelly '13, Laurence D. Luey '29, Thatcher H. Mawson' 27, Ray Meade '24, John W. Powers, Jr., '33, Joseph G. Reid '08, Nelson Smith' 35, Robert C. Stobert '12, David Thurlow' 41, Oscar G. Thurlow' 04, and Fernand C. Weiss' 13.

Prescott Kelly President for some years.

Prescott Kelly, President for some years, and Douglas Elliott, Secretary, also for some years, called for relief, and a new shuffle of the cards for officers of the Club, with the result that before anyone knew what had happened, a new President, Clarence Stobert, and a new Secretary, George Fertig, were not only elected but assigned to raising the money for the luncheon itself. Since these two offices, however, were the two highest paid positions within the power of the Association to fill by democratic means, the business of the session was declared finished, legal, and in good form. — George J. Fertig'24, Secretary, Comer Building, Birmingham 3,

Technology Club of Chicago

The first meeting of the season, with Edmund G. Farrand '21 as president, got off to a flying start on Thursday, October 4, when a dinner meeting held at the Electric Club on the 39th floor of the Civic Opera Building was attended by 61 members and two guests. All arrangements had been made by our program committee chairman, Don Gilman'32. After cocktails and an enjoyable dinner, Penn Brooks'17 gave an informal talk covering his recent trip to China as vice deputy director in an ad-visory capacity to the Chinese War Production Board.

Penn related many interesting experiences of his four-month stay in China. He noted that the Chinese were industrious and very ingenious but were handicapped in their war production by lack of materials, both from outside China and from within, where the transportation system is grossly inadequate for that country's industrial and domestic needs. China is further hampered, he says, by a terrific inflation that is ballooning daily. Penn believes that she should be given aid in her reconstruction of industries through American consulting engineers and that the United States could develop a great commercial market in the Far East by such assistance in bringing China to her feet as a power there. After speaking for an hour and a half, Penn answered many questions. All those attending were richly rewarded in hearing Penn Brooks' observations. - ELMER D. SZANTAY'35, Secretary, Sandee Manufacturing Company, 3945 North Western Avenue, Chicago 18, Ill.

Technology Club of New York

Since our last notes, the Club has been percolating right along, and plans are set for our annual banquet in December. Dr. Compton is completing his 15th year as president of the Institute, an achievement which we think deserves special commemoration, and we are combining this banquet in his honor with a celebration of V-J Day. Bradley Dewey'09, President of the Dewey and Almy Chemical Company and past rubber director of the Office of Price Administration, is to introduce Dr. Compton and give some interesting side lights on his history, past and present. A. Warren Norton'21, President of the Alumni Association, is also making a few remarks, as is our friend of long standing, Horace Ford, Treasurer of the Institute. All arrangements have been completed for the main ballroom at the Biltmore Hotel on Wednesday, December 5, at 7:00 p.m. Those Alumni in this area whose addresses are correctly recorded with the Alumni Association have received a special notice of the banquet, but if you did not receive one and see this notice in time, please pass the word along. Costs involved are nominal, and we assure you of a real Technology affair.

New members of the Club are coming in most satisfactorily, and we are glad to announce the following Alumni who have been elected to membership in the Club since our last report: George W. Bricker, Jr., '23, Alec J. Tigges'23, Clarence J. LeBel'26, F. L. Gemmer'24, Frank A. Wilkinson'26, John J. Guarrera'43, Henry N. Bates'30, Perry O. Crawford, Jr., '39, Harvey I. Kram'42, Malcolm S. MacNaught'24, and Thomas F. Bundy'24. Their

addresses are on file at the Technology Club, 24 East 39th Street, and may be obtained by a telephone call. If you are newly arrived in the city, will you please notify either the undersigned or Pat Paterson of the Club? We urge members of individual classes to utilize the Club more for class luncheons or dinners; suitable arrangements will gladly be made if you will get in touch with me. It will greatly facilitate maintenance of our contacts and friendships and also current news happenings if you will drop a postal card to the Secretary.—WILLIAM W. QUARLES '24, Secretary, 24 East 39th Street, New York, N.Y.

Technology Club of Philadelphia

Anyone noticing the faces of those who attended the October 16th meeting at the University Club could tell that they were having a memorable time. No one, be he ever so antisocial, could long remain that way under the multiple persuasion of food, drink, good fellowship, and the song leading of Osgood W. Holt '17. Our diners' exuberance was indeed restrained only by the beginning of the business meeting. Our toastmaster and President, Herbert W. Anderson'15, introduced Professor S. H. Caldwell'25 of M.I.T., who was to give a lecture to the Franklin Institute on the following day. Andy then told the Club of the appointees to the new committees as follows: nominating committee for 1946 officers-William H. MacCallum'24, chairman, Kenneth T. King'15, Robert W. Weeks'13, Ralph M. Shaw'21, Dugald C. Jackson'21, Garland Fulton'17, and Edward J. Healy '23. Andy then further confirmed the appointment of Ed Healy as chairman of the placement planning and guidance committee in place of Robert E. Worden'36, who will continue in an advisory capacity. Phil Alden'22 as vicechairman and Charlie Weiler 25, in addition to previously appointed members, will assist Ed in his new capacity.

Professor Charles E Locke'96, faithful Secretary of the Alumni Association down from Cambridge, gave our Club a comprehensive preview of President Compton's report, which is about to be distributed to all Alumni on the mailing list. In addition, he told of his extensive "ear to the ground" tour around the Institute to find out what was going on in each department, in an attempt to give each of us in Philadelphia the feeling that we had just spent an informative visit at M.I.T. Since most of us are so busy that we couldn't do this ourselves, we are grateful to Professor Locke for all his personally garnered information. Charlie told us that the Placement Bureau was receiving nearly 100 requests a week for men available for placement in industry. We are proud indeed of the part which this Club has been able to contribute and continue to suggest that interested Alumni direct their inquiries and qualifications to Edward J. Healy at the Philadelphia Brewing Company, 6th and Clearfield Streets, or

P. E. Alden, Philadelphia Electric Company, 1000 Chestnut Street, both in Phila-

delphia.

Francis J. Chesterman '05, life member of the Corporation and a loyal member of the Club, then introduced Professor Francis O. Schmitt, Head of our Department of Biology. I suspect this writer was not alone in shifting his derrière about in his seat, as he once used to do in 10-250 just before a dry lecture, knowing we were to hear from a biology professor, probably one of those hirsute bibliophiles who spends all his life isolating minutiae. Professor Schmitt, however, turned out to be disarmingly young and short-haired, while not the least of his accomplishments was to make a very technical talk fascinating and significant. The burden of the dissertation was that a new biological building block had been discovered for fibrous proteins which affords a broader knowledge of the structure of living tissue and which anticipates the hope of an understanding of such diseases as cancer and meningitis. The size of this unit was arrived at independently by two methods - electron microscopy and x-ray diffraction — and appears to be constant for differing types of muscular and bony tissues. What impressed Dr. Schmitt's listeners most was not the technicalities of his subject, but his own intense enthusiasm and practical approach to the disease prob-lems of today. We are sincere and equally enthusiastic in recommending Dr. Schmitt and his instructive slides and express the hope that he may soon again portray future developments in this field of medical mystery.

The last event of our meeting was a motion picture, "Eternally Yours," arranged by Bill MacCallum, of Modern Talking Picture Service, and provided through the courtesy of E. L. MacWhorter of the A. M. Byers Company. The development of the manufacture of wrought iron was the subject of this film. Many of us received a liberal education in the commercial uses of a product which derives its name from the

peculiarities of its manufacture.

The 86 members who attended were as follows: C. K. Allen'17, H. W. Anderson '15, Mark Aronson'16, Wilfred Bancroft '97, A. T. Barclay'22, E. S. Bates'24, W. J. Beadle 17, J. S. Bleecker 98, Harold Boer-icke 44, W. D. Bowman 44, W. H. Brockett '35, G. R. Bull, Jr., '35, D. P. Burleson '38, O. D. Burton '18, Samuel H. Caldwell '25, F. S. Chaplin'32, F. J. Chesterman'05, David Christison'42, J. E. D. Clarkson'21, J. B. Coleman '26, A. G. Connolly '27, G. G. Cudhea '29, W. N. Currier '31, J. L. Cushnie '39, H. F. Daley '15, H. S. Dimmick '22, W. W. Farr '26, Garland Fulton '17, A. M. Gates '26, E. M. Goldsmith Jr., '23, H. F. Goldsmith '17, Francis Good-le' 17, Leonth Grandlet '22, P. M. University of the control o ale 17, Joseph Greenblatt 22, R. M. Harbeck 28, E. J. Healy 23, O. W. Holt 17, W. G. Horsch 13, D. C. Jackson 21, J. K. Jacobs 37, H. W. Jones 26, H. S. Kelly, Jacobs '37, H. W. Jones '26, H. S. Kelly, Jr., '41, K. T. King '15, J. H. Klaber '38, H. E. Knox, Jr., '42, C. A. Lindgren, Jr., '18, C. E Locke '96, R. N. Lovett '43, W. H. MacCallum '24, H. W. Mahr '07, S. K. McCauley '41, J. B. Meakin '35, M. T. Meyer '32, C. E. Miller '33, V. G. Miskjian '29, F. H. Moore, Jr., '34, C. W. Noyes '15, N. F. O'Shea '30, E. S. Petze '28, J. A. Philbrick '20, R. S. Pollack '31, E. S. Pomykala '23, R. A. Pouchain '17, O. B. Pyle. kala'23, R. A. Pouchain'17, O. B. Pyle,

Jr., '16, W. F. Ramsay '36, A. E. Reinhardt 37, W. R. Robinson 18, Herman Schaevitz '38, R. M. Shaw, Jr., '21, C. W. Stose'22, C. W. Streed'41, D. E. Sunstein'40, A. G. Waggoner'42, W. H. Wannamaker, Jr., '30, F. E. Washburn'26, R. W. Weeks'13, C. B. Weiler'25, K. E. Wenk, Jr., '42, and W. J. Willer'30

W. J. Wiley '29.

Our next meeting will be held in the Burgundy Room at the Bellevue-Stratford Hotel on January 15, when Bradley Dewey '09 will speak to us on some of his experiences while rubber administrator. His responsibilities in Washington, coupled with his association as president of Dewey and Almy Chemical Company of Cambridge, will provide unusual information of a most fascinating nature. We are sure that all those who are fortunate enough to be able to attend this meeting will be as enthusiastic over Bradley Dewey as were your officers by his acceptance of the invitation to be with us.

As most of you know, President Compton has returned to the Institute. Before the atomic bombing of Japan, President Compton had consented to speak at the January meeting. When he told us last summer that he had been granted a leave of absence from the Institute in order to join General MacArthur's technical staff, we were extremely disappointed that his presence in the Tokyo area would prevent his being with us in Philadelphia. Now that the fortunes of war no longer require his complete attention, we are eagerly awaiting Doctor Compton's assurance that he will join us for the January meeting as originally planned. It is unnecessary to mention that his talk under current circumstances will be even more impressive than that which had been anticipated at the time of his original acceptance. In fact, we are certain that the January meeting will be long remembered and sure that you will enjoy it with those of us who have worked so diligently to provide the kind of meetings which you have requested.

We should like to repeat our intention of forwarding notices of future meetings only to members paying dues. Final arrangements for the January meeting will be mailed to all such members in sufficient time to assure reservations for these members and their guests. Unfortunately, the walls of the Burgundy Room are not constructed of Mr. Dewey's admirable rubber, and we must therefore accept reservations accordingly. As previously announced, the directory of active Alumni in the Club will be distributed at the January meeting. This directory will include the business affiliations, as well as the names and addresses, of those Alumni whose dues were paid before November 1, indexed alphabetically and by classes. At the time this is being written, there are 215 active members, an all-time record for our Club. We regret that it was necessary to set any definite dead line, but it is our intention to continue this directory as a permanent service to interested Alumni in this area. Alumni wishing pertinent information may telephone Jefferson 0642. — EDWARDES S. Petze'28, Secretary, Scott Paper Company, Chester, Pa. Assistant Secretaries: HAROLD Boericke, Jr., '44, 5932 Overbrook Avenue, Philadelphia, Pa.; Robert M. Harbeck '28, Fidelity Machine Company, Phila-

delphia, Pa.

M.I.T. Club of Western Pennsylvania

The first meeting of the year was held on Thursday, October 4, at the University Club in Pittsburgh. The following officers and committee chairmen were announced as having been appointed by the new board of governors at their first meeting under the recently adopted constitution: Vice-president, J. L. Thistle'32; Secretary, H. L. Johnson'32; Treasurer, E. M. Barnes'23; registrar, A. K. Redcay'34; scholarship committee, T. Spooner'09; meetings and entertainment, J. H. Cox, Jr., '23; finance, E. M. Barnes '23; endowment, R. G. Lafean '19; membership and attendance, A. K. Redcay'34.

After the reading of the Secretary's reports, the chairman of the entertainment committee outlined what promises to be an attractive and interesting program for the coming year. H. L. Lang'09 then reported on the activities of the postwar placement committee; and C. M. Boardman 25, on the work being done by the scholarship committee. The best wishes of the Club were extended to J. H. Cox, Jr., '23, past President, who is being transferred to the Pacific Coast. Herbert H. Hall'14, who spoke on "Personal Impressions of Germany after V-E Day," based his remarks on a recent visit of more than three months to that country investigating the German aluminum industry. Mr. Hall presented some interesting side lights on the condition of German industry in general at the time of V-E Day, with particular reference to the degree of technological advancement as compared with this country.

The following members attended the F. W. George, 3d, '45. - HARRY L. JOHNson'32, Secretary, 1215 Savannah Avenue,

Pittsburgh 18, Pa.

Technology Club of Rochester

Harold E. Akerly'10 was elected president of the Club at its annual meeting on October 15. Other officers chosen to serve with him for the coming year are as follows: First Vice-president, Clarence L. A. Wynd '27; Second Vice-president, Dwight Vandervate'22; Secretary, Frederick J. Kolb, Jr., '38; Treasurer, Harold L. Smith, Jr., '39; executive committee — Collin H. Alexander'39 (elected for 2 years), James S. Bruce'39 (elected for 3 years), Kenneth J. Mackenzie'28 (continues in office).

Meeting at the Rochester Country Club on a somewhat forbidding day, only a few of the members took advantage of the chance to brush up on their golf game. A large attendance, however, was on hand early for the excellent dinner Saturday evening. Edward S. Farrow'20, alumni term member of the Corporation, described briefly the recent Corporation meeting at Cambridge. Mr. Farrow and Leon L. McGrady'17 presented a resolution on the death of Frank W. Lovejoy'94. Mr. Lovejoy had brought together the first group of Alumni who formed the Club on January 3, 1910. Mr. Farrow commented particularly on Dr. Compton's citation of Mr. Lovejoy, in which he stated that Mr. Lovejoy is probably more responsible than any other single Alumnus for the establishment of M.I.T. with its present fine buildings and outstanding equipment. The resolution was unanimously adopted and a copy sent to Mrs. Lovejoy.

Harold L. Smith, Jr., '39, presented the

Harold L. Smith, Jr., '39, presented the treasurer's report for 1944–1945. Both the number of paid members and the financial condition of the Club are unusually satisfactory. C. King Crofton '22 discussed the interesting predicament of an alumni placement committee with many industries asking for technical men, and no applicants! Prospects for men returning from war service seem unusually bright in our area.

John F. Ancona '03' reported on the activities of the scholarship committee. During the past year no scholarships have been awarded by the Club because so few civilian students were entering the Institute. It has therefore been the policy of the Club to build up a reserve fund available for scholarships, anticipating a brisk demand in the next several years. In the discussion following it was unanimously agreed that the Rochester Technology Club Scholarship has been one of our outstanding activities and that without question it should be continued in the future.

Donald B. Kimball'20, our retiring President, appointed as a nominating committee Gregory Smith'30, Hugh M. Shirey'22, and Gerould T. Lane'13, chairman. The nominating committee proposed the officers listed above, and they were elected by unanimous vote. The meeting closed with Howard S. Gardner'30 supervising the singing of 'Sons of M.I.T.,' accompanied by the playing of the Alumni Asso-

ciation recording.

The following members were present: Harold E. Akerly '10, Sydney Alling '11, John F. Ancona '03, Kenneth T. Barkey '43, Arthur H. Bond '15, James S. Bruce '39, J. Howard Cather '12, Allen L. Cobb '26, J. Nelson Cooper '30, C. King Crofton '22, Edward S. Farrow '20, Arthur B. Fox '33, Howard S. Gardner '30, Alexander F. Hamilton '35, Donald B. Kimball '20, Gerould T. Lane '13, Andrew Langdon '22, Leon L. McGrady '17, Kenneth J. Mackenzie '28, William W. Northrop '25, Frederick W. Paul '35, Yu Kun Pei '43, William A. Pitbladdo '31, Hugh M. Shirey '22, Gregory Smith '30, Harold L. Smith, Jr., '39, Robert E. Smith '33, Cyril J. Staud '24, Frank C. Taylor '11, Stanley C. Wells '30, Paul B. Wesson '98, and Clarence L. A. Wynd '27. — Frederick J. Kolb, Jr., '38, Secretary, Building 14, Kodak Park, Rochester 4, N.Y.

Washington Society of the M.I.T.

The first meeting of the Society on October 11, was a sparkling affair from many points of view. As has been the case for many years, we are lucky to have the Young Women's Christian Association as

our meeting place. The fact that the Y.W. as a rendezvous seems a little unusual makes it easier for visiting Tech men to remember it. We have a number of visitors from out of town at every meeting. You are invited on the second Thursday of each month at 6:15 p.M.

Touches of novelty throughout the room emphasized the need for assembly to bring ourselves up to date after the summer recess. One by one these small factors would not have been very noticeable, but taken all together the effect made a swell atmosphere for an alumni dinner, including promotions for the uniformed people, such as Harry Fisk'22, for example, who is now a lieutenant colonel. On the other hand, some of our Army officers, including Major Joe Gaffney 28, appeared with discharge buttons and new civvies, full of conversation about their new jobs. The Y.W. served a superior meal. Everyone was eagerly anticipating Dr. Karl T. Compton's direct report on the Pacific made possible by the end of the war. To say the meeting sparkled is not exaggeration. A Community War Fund speaker made an appeal for his organization, concluding gracefully, "If M.I.T. men make a contribution to the War Fund commensurate with their contribution to the war effort, the cause will be won.' Harry Fisk reported as placement chairman that he had more jobs on the books than he had takers, a situation that we hope will

Bill MacMahon'22, President, in introducing Dr. Compton, described the narrow margin by which we had got our speaker. It seems that during the launching of the S.S. M.I.T. Victory at Baltimore last summer, Dr. Compton and Bill represented the Institute. Bill lined up Dr. Compton for our first fall meeting. Between that time and the meeting, Dr. Compton sailed for the far Pacific assignment, consuming months of time, but the conclusion of the assignment brought him home in the nick of time to stand before us as originally planned. With that, Dr. Compton began. I feel that some of the things that he forthwith related to us may not be recorded unless we

present them rather fully here.

Dr. Compton and Dean Ed Moreland'07 were designated to establish a branch office of Scientific Research and Development in the far Pacific, with headquarters in Manila. Both were given the temporary rank of major general in the Army and early in August were flown to Manila in three days to get the job started. They planned an advance branch of O.S.R.D. to include experts and facilities for work with radar, countermeasures, rockets, medicine, bacteriology, and other phases of the scientific aspect of the war to correspond with parent organizations here for study of enemy methods and weapons, and to devise means of coping with scientific war prob-lems locally. 'Technology Around the World" might have been Dr. Compton's theme because, as you will note, Tech men kept turning up everywhere he went. While Dr. Compton and Dean Moreland were being entertained by General MacArthur at his residence in Manila, news came of the results of the atomic bomb in Hiroshima. This event caused tremendous speculation and much conversation in Manila, where our team were considered authorities and were pressed for answers to questions much like those that were on every tongue throughout the world. Following the explosion of the atom bomb, the Japanese overtures leading to surrender caused the Tech team to change plans for an advance O.S.R.D. Subsequent events confirmed their decision. V-J Day closed out O.S.R.D., Pacific

We heard direct from the M.I.T. Club of Manila. Our team was cordially entertained by this excellent brother society at a dinner of 50 men, 37 Filipinos, plus some Army Alumni on the island. M.I.T. is well represented in the engineering services of Manila. At the dinner were the top public health executive, the chief engineer of the water works, three city planners, and, far from least, the Philippines' chief distiller, operating, of course, in a private capacity. Mr. Espinosa'22, the distiller, later escorted the team through his works and explained his business, which is a "war baby." Before hostilities, Mr. Espinosa was a chemist with a lab and small plant in Manila. Completely wiped out by war, he sought the quickest way to recoup financially, deciding to distill whiskey in a garage not seriously damaged. From palm sap and coconuts, he obtains 65 per cent grain alcohol, which he blends and ages -15 seconds for aging — and sells, without lack of demand, to all and sundry. Business is good. Mr. Espinosa says his effort is for the good of all since it tends to reduce the amount of bad liquor people might con-

sume were he not in operation.

The mission of the Compton and Moreland team was modified to provide that they would organize a group of 15 scientists as a mission to Japan to (a) find and detain that country's leading scientists; (b) seize and guard scientific laboratories where major experimental work was in progress; and (c) question the scientists and learn the extent of Japanese knowledge to date. Shortly after initial landings in Japan by the military, the Compton and Moreland team landed, equipped with pup tents and K rations. These proved unnecessary. First, they sought out Professor Yagi, President of the College of Engineering and reputed to be the Vannevar Bush of Japan. Professor Yagi was hard to find, but when found, his disclosures were not very significant. The answer to one question asked him focused attention on the jealousy existing between the Japanese Army and Navy. "A Japanese admiral or general," he stated, "would lose the war before either would shake hands." Another line of questioning led Professor Yagi to discuss his radio death ray, which at the final stage of Japanese development would kill a rabbit at 30 feet from the antenna. This device, still experimental, did not impress our team as having any serious future.

The principal Japanese research organization was a group of 300 scientists, principally chemists and physicists, which worked independently of schools and industries, producing processes and inventions which were sold or licensed for industrial use. The proceeds from sales and licenses, the only income of the group, consisted of cash or stock in the interested companies. The Japanese had access to basic atomic research, had a cyclotron and a good one at that, also some uranium and a partial understanding of how to use it. But, as Dr. Compton said, a cyclotron was not an atom

bomb, and besides, Japanese scientific cal-culations, contrary to our own, showed that the uranium atomic reaction would be too slow to be explosive and was hence contemplated only as a source of industrial energy. A laboratory, set up for atomic industrial energy development, had been erected, and the Japanese knew how to proceed. But a bombing raid wiped out the lab, setup, records, and all, thus ending the project. University scientists, Dr. Compton reported, played only a subordinate part in the development of war devices because of extreme compartmentation of the work, stemming from mistrust by the military. A single university group would be given a small component to develop. When finished, the device would be taken away and linked with complementary components developed elsewhere until the completed weapon, known only to the military, was tested, modified, and eventually put into production. The scientists had no inkling of the ultimate product on which they were working. Such a policy retarded the scientific development of the war effort. Why did this mistrust exist? Dr. Compton believes that the scientists had a world view of the war situation and, realizing the optimism and blindness of the Japanese military, were reluctant for their country to go to war. At any rate, since the scientists had studied in America or Europe, they were suspected of foreign alliances and were in the "dog house" throughout the

Once the Compton-Moreland team found the men who knew the answers, complete information came easily. The Japanese were eager to tell all they had, either developed or pending, even though the team had not previously found out about these items. A frankness apparently due, said Dr. Compton, to the Japanese basic feeling of in-feriority and pride in the clever items they had dreamed up despite their handicap. One conference conducted by Dr. Compton was in Tokyo at the Japanese Naval Research Laboratory, where the team, during a three-day session, questioned 41 Japanese admirals. In addition to our own interpreter, the Japanese furnished another, a young Japanese, who had amazing facility with technical English. At the close of the period Dr. Compton remarked upon this outstanding ability in English, whereupon the Japanese disclosed that he had studied at the Institute in Dean Moreland's own division in 1939.

Getting away from science a little, Dr. Compton described the destruction at Tokyo by noting the great density of people in Tokyo before the raids and the fact that in these formerly dense districts, now for 5 miles at a stretch there is actually no standing thing. Thirty-five square miles have been wiped completely clean of any structure or habitable building. Here and there stands a solitary lathe or drill press indicating where a house once stood in which was a home factory, doubtless used for war purposes. In Tokyo alone a population twice that of greater Chicago has been driven out or killed. This destruction is made the more graphic by a later question of Colonel Richmond's: "How much of the damage in Tokyo is estimated to have come from high explosive bombs and how much from incendiary?" The answer: "No high explosive bombs were dropped on

Tokyo. The entire damage is from fire bombs dropped in two raids. The concentration of fire bombs was terrific the rate of 100 incendiaries on an area the size of a football field." Further questions developed other replies: that 2,000 paper balloons carrying bombs had been dispatched for the United States to bolster internal Japanese morale (these bombs had been highly publicized by Japanese newspapers); that disease germ warfare had reached a highly advanced stage, although it had not been used in this war, scientists who developed the weapon claiming it was for defensive purposes, although this statement was doubted by our team; and that laboratory work by the medical people in the cure of tropical diseases was highly developed by the Japanese. In discussing the devastating effects of the atomic bomb, Dr. Compton spiked the rumor that radioactivity existing after the instant of the explosion would have harmful effects on personnel entering a bombed area. His opinion was based on radioactivity measurements taken by Japanese scientists after the bombing and confirmed by measurements and interpolations made by our own investigators later. Although Dr. Compton has returned to this country, our Dean Moreland is still heading the continuing study and questioning project by the sci-

entific team in Japan.

Present were: J. G. Crane'90, B. P. DuBois'92, W. E. Haseltine'96, F. A. Hunnewell'97, H. M. Loomis'97, H. C. Morris'00, M. L. Sperry'00, G. W. Stone '89, P. H. Thomas'93, Charles Bittinger '01, G. E. Marsh'02, W. L. Cook'03, William McEntee'04, A. M. Holcombe'04, G. C. Riddell'04, F. W. Milliken'04, J. A. Eures'05, F. F. Kriegermen'05, G. N. Wheat G. C. Riddell'04, F. W. Milliken'04, J. A. Furer'05, E. F. Kriegsman'05, G. N. Wheat '04, B. A. Robinson'09, M. R. Scharff'09, P. H. Heimer'08, C. G. Richmond'11, M. C. Mason'12, L. W. Parsons'13, R. M. Wilson'13, A. D. Beidelman'15, V. L. Ellicott'16, F. P. Upton'16, W. E. Wentworth'16, J. P. Ferrall'17, D. A. Tutein'17, L. J. Grayson'19, W. C. Mehaffey'17, E. M. Kenison'19, M. P. Smith'19, P. F. Swasey'19, John Nolen, Ir. '20, I. W. Swasey'19, John Nolen, Jr., '20, L. W. Conant'21, G. B. Speir'22, G. P. Brookfield '22, H. H. Fisk'22, R. J. Hogan'22, L. K. Downing'23, R. K. Thulman'22, G. R. Hopkins'22, W. K. MacMahon'22, C. A. MacMac'22, L. R. MacMahon'22, C. A. Moore'22, J. R. Morton, Jr., '22, A. M. Pedersen '12, J. H. Teeter'22, W. V. Cash '24, J. E. Jackson'24, P. C. Maynard'24, R. P. Schreiber'24, Henry Shore'24, W. W. Sturdy '24, Ralph Ilsley '25, H. B. Swett '25, S. J. Cole '26, J. G. Fletcher '26, J. Y. Houghton '26, Stuart John '26, T. L. Soo-Houghton 26, Stuart John 26, 1. L. Soo-Hoo 26, E. G. Cowen 27, G. E. Thomas 27, R. M. Tucker 27, J. W. Gaffney 28, M. W. Keyes 28, G. D. Mock 28, A. E. Beitzell 28, J. A. Plugge 29, N. P. Stathis 29, F. W. Turnbull 30, G. R. Williams 29, A. F. Bird 30, C. W. Maskell 30, N. C. Nelson 30, S. C. Prentiss 31, Lester Glickman 32, F. M. Moor 22, P. S. Prender 22 man'32, F. M. Moss'32, R. S. Prescott'32, R. W. West '32, F. F. Aldridge '33, S. F. Allison'33, A. S. Hayden'33, J. F. Burke '34, J. F. Longley '33, G. E. Powers '34, L. A. Carten'34, S. N. Alexander'35, H. C. Thomas '35, H. F. Lippitt '36, S. C. Rethorst 36, W. B. Sharp'36, G. B. Hunter, Jr., '37, W. T. Shuler '38, Charles Friedman '39, J. H. Howard '39, H. R. Seykota '39, H. H. Davis'40, W. Z. Hwa'40, Z. W. Wilchinsky '42. - Frank W. MILLIKEN'04, Secretary, 613 Greenwich Street, Falls Church, Va. Albert F. Bird'30, Review Secretary, 5070 Temple Hills Road, Southeast, Washington 20, D.C.

M.I.T. Women's Association

The first fall meeting was held on October 29 at the Institute, where a six o'clock supper was served in the Emma Rogers Room to 27 members and guests. Julia Sullivan'42, Recording Secretary, read a report of the annual luncheon and business meeting in June. Mrs. Sage'13 brought several matters to the attention of the Association, such as the winter's program of meetings, the bringing of guests eligible for membership, and suggestions for the annual gift to the undergraduates (a dic-

tionary, a dinghy, a shower?).

Mrs. Compton then brought us up to date on the progress of the women students' house since the June meeting, when, from Mr. Ford, Treasurer of the Institute, we had first heard of its purchase. Mrs. Compton's charming and informal account traced its development through the summer, when it was being got ready for occupancy. A rather large committee had been appointed to take charge of the physical fitting, furnishing, and decoration and to discuss the permanent organization with reference to rules, applications, and assignment to rooms. This committee, headed by Mrs. Karl T. Compton, consisted of Charlotte Simonds Sage'13, Louise Peirce Horwood 19, Mrs. Leicester F. Hamilton, Margaret Whitcomb'39, research associate in me-teorology, Mary Sullivan'45, former Presi-dent of the Association of Women Students, Joan Rothwell'45 as substitute for her, Grace Farrell'29 as substitute for Mrs. Sage, and Florence W. Stiles'22 as adviser to women students.

It was a hard summer in which to decorate and furnish any house and especially one designed as "a suitable place in which to practice gracious and harmonious living"; the story of the struggle was absorbing; and the fact that this residence, with or without silverware, was actually to welcome its occupants at the beginning of the fall term on November 5 was a witness to the diligence and enthusiasm of the committee. As to organization, a setup parallel to that for the men's dormitories will provide for a permanent advisory board to succeed the present temporary one, supplemented by a house council which may be given suggestions, with a minimum of rules stipulated. Mrs. Alvord, the housemother chosen to shoulder the many subtleties of this new position, was a guest at the meeting, and we were all very happy to meet her. — Ruth Andrew Dean' 29, Secretary, 11 Fuller Brook Road, Wellesley 81,

Worcester County Alumni Association of M.I.T.

On October 16 at the Hotel Sheraton in Worcester, the Association held its first postwar dinner meeting with an attendance of 40. Orville B. Denison'11, President, conducted the meeting and also led the group in singing Tech songs. Mr. A. F. Sise from the Radiation Laboratory at the Institute spoke on the subject of radar. A lively question period followed his illustrated talk.

A report on postwar placement for Alumni members was given by William A. Wilder '98, who knew of many openings for industrial chemists and mechanical engineers as well as for electrical engineers. Professor Charles E Locke'96 was unable to be with us but sent his best wishes. Several members have expressed a desire that more frequent meetings might be held in the future, as would seem to be justified by the interest shown. Carleton A. Read '91 of Worcester and Edward Earl'91 of Leominster, the only men of their class who belong to this Association, are old stand-bys, and it is a pleasure to see these two enjoy themselves. Alumni who attended were as follows: Edward Earl'91, Carleton A. Read'91, William A. Wilder'98, Harry S. Kendall '04, Fremont N. Turgeon'04, Andrew B. Sherman '06, Charles E. Allen '07, F. Harold Daniels '11, Orville B. Denison '11, Harold L. Robinson'11, Frank S. Hunt'16, Thomas P. Kelly '18, Ernest P. Whitehead '20, Robert H. Brown'22, Harold O. Berry'22, Robert M. Littlefield '22, Max Levine '25, Frank H. Riegel'25, Ervin W. Berry'26, Charles Rich'26, Richard E. Harrison'27, Robert N. C. Hessell'27, Roger M. Peirce '27, Angelo M. Altieri'29, Gordon W. Browne'29, John S. Middleton'29, Raymond Donway '31, Arthur E. Jorjorian '31, Karl H. Volkhausen'31, Howard F. Atwood '32, F. Francis Donoghue '32, Fred E. Mader'32, W. Franklin Baxter, Jr., '34, Carl. H. Wilson'34, G. Donald Fenton'35, Arthur J. Lariviere '35, George W. Coleman 37, John M. Gould '37, Donald M. Whitehead '45.

It has recently been called to our attention that William Read Westcott'94 of Harvard, Mass., died on February 9, 1941. Salmon Wilder Putnam, 3d, '97 of Fitchburg also passed away on July 12, 1943. Henry P. Merriam'86 of Hubbardston, Mass., is a patient at the Henry Heywood Memorial Hospital. — Arthur J. Lariviere'35, Secretary, 7 Woodbine Street,

Worcester 3, Mass.

CLASS NOTES

1877

Regretfully the report has to be made that two of our members, Byron E. Higgins and Frank Tucker Hopkins, M.D., both passed away on July 25. Thus is our membership

reduced to seven.

Byron E. Higgins, son of Noah E. Higgins, was born in Wellfleet, Mass., on October 1, 1853. He was the eldest of six children. His father was a sea captain, and because of Byron's health, his father took him to sea with him when he was nine years old. He stood watch and performed the duties of the regular seamen. Later, after graduating from high school, he went to Brockton, Mass., and there learned the trade of master mason. He became a mason contractor and followed that profession for 50 years. His course at Technology was to further his knowledge of the work that he was undertaking. In 1881 he married Fredena Knowles, who died in 1936. They celebrated their golden wedding in 1931. They had one child, now Mrs. Adelia H. Waters, with whom her father lived at Winter Hill after the death of his wife. Higgins was a member of the King Solomon Lodge of the Ancient Free and Accepted Masons. He was a man of quiet disposition, fond of his home and friends, and was held in the highest esteem by all who knew him. He was one of the most regular attendants at our class reunions, his last attendance having been in 1942.

Frank T. Hopkins, M.D., was for many years a practicing physician in New York. He was a man of pronounced feelings, both socially and politically. In his spare moments he wrote poetry. Although he did not attend our class reunions, he was always interested in them and wanted to know how many and who attended. In the last two years of his life his eyesight had practically failed, keeping him much indoors, but with his wife and daughter he always cordially welcomed your Secretary when he called. — George W. Kittredge, Secretary, 592 North Broadway, Yonkers 3, N.Y.

1888

Frank Adams was one of our prominent classmates in the good old days on Boylston Street. In 1913 he came on from Akron, Ohio, to our 25th reunion at Wianno, Mass., helped entertain the Class of 1913, played golf, and celebrated in general. He hasn't been seen since. The following letter will therefore be of interest to all 56 of our classmates still living: "Dear old classmate - I mean young classmate, for I am just one year older than you. Anyway, I am very glad you wrote me and that we are both in good health. I envy you your summer on Chebeague. Although I have never been on the island, I have been on Monhegan twice at Pemaquid and Southport, and lived all summer at Bass Rocks, Gloucester. During all my mature years I have regretted that my spot in life has not been in New England and have accordingly spent as much time there as possible. I studied mechanical engineering at Technology and then foolishly took a position in a bank, where I stayed for 23 years, ending as cashier. I was then for 12 years treasurer of Goodyear Tire and Rubber Company. I retired then on account of Mrs. Adams' health, but she died two years later, and I was a widower for 18 years not so pleasant. I had a big place in Akron and had built a nice winter house on the south edge of Miami, Fla. I went there for about 10 winters but tired of going back and forth so often. My only sister lived here. So I sold my Akron and Florida houses at a big loss, bought a very nice place here, and married the widow of my half brother — a girl I had known for many years. So here I am.

"We know few people and live very quietly, but we have the best year-round climate in the United States — never too hot nor too cold. Now that gasoline is not rationed, we expect to tour some and see this really grand state. We live on the side of a small mountain on the edge of Santa Barbara. We are 600 feet high and have a grand view over the city and the Pacific and along the shore line east and west for many miles. High ranges of mountains only a few miles behind us run up and down the state, making the drives very interesting. I have always been mechanically inclined and should have made that my lifework;

but I probably made more money as it was, and mechanical things have been my recreation. I have a very well-equipped shop here on my place and spend much time fixing old clocks and making things.

"We have an old friend who has lived here for six or seven years but owns a home in Lincolnville, Maine, where she is now. She has invited us there for some time next summer, and I should like to go if travel conditions losen up somewhat. I am going to look you up, if we go, and have a good visit. I have not seen a single man from our Class since the last reunion I attended, 20 or more years ago. Thanks for the information about our living classmates. It did me a lot of good to hear from you."

BERTRAND R. T. COLLINS, Secretary, 76
Murray Place, Princeton, N.J. SANFORD E. THOMPSON, Assistant Secretary, The Thompson and Lichtner Company, Inc., Park Square Building, Boston 15, Mass.

1889

The fact that the Class held its annual reunion at the home of the Secretary in September instead of on the traditional Alumni Day in the Spring, is another proof of its broad-mindedness and freedom from the shackles of habit. This date, September 12, was selected in an effort to corral as many members as possible while they were on the spot and before they departed for the South, or wherever it is they depart for at the first shadow of winter. The selection was justified by the fact that the trap netted 10 acceptances, from as many classmates, all looking and feeling fine. These were, in alphabetical order, Zenas Bliss, E. V. French, R. D. Hall, F. W. Hobbs, President, Henry Howard, W. H. Kilham, Secretary, E. P. Marsh, W. Lincoln Smith, Charles H. Warner, and Arthur Williston. All had the appearance of enjoyment. Discussion and repartee were lively and continuous. A chart of the guests' preferences in the way of refreshments showed that seven, or 70 per cent, took cocktails, two, or 20 per cent, tea (with lemon) and one, or 10 per cent, refused to take anything at all. This proves that engineers are not wholly alcoholics, or doesn't it? One old grad thought that Technology was indulging too heavily in research, at the expense of education. The Secretary wouldn't know. One of our lady classmates, Miss Annie G. Rockfellow, now of 1620 Garden Street, Santa Barbara, Calif., expressed regret at her inability to be present because her new plane had not been delivered. Other alibis received, though cordial, were less convincing. A total of 75 invitations were sent out (the extent of the class list at present), and 44 replies were received, of which 10 were acceptances.

The Secretary has learned of the death of Luther W. Bridges on April 14 but has no details at present. — Paul Hawkins died on August 27 at Springfield, Mass. The following account of his life is taken from the Springfield Republican: "Col. Paul Rhodes Hawkins, 78, Spanish-American war veteran, prominent industrialist and one-time member of the city government, died at the home of his sister, Mrs. Thomas Dyer of 1410 Parker Street, with whom he made his home. A retired assistant to the president of the Pullman Standard Car Manufacturing company of Pittsburgh, Pa., he had earlier served in the common

council from ward 4 in 1894 and 1895, later representing ward 6 in the aldermanic body. While in the lower board, he was instrumental in the construction of the Howardstreet armory. Col. Hawkins retired from his post with Pullman Standard in 1939, after serving 17 years. He went to Pittsburgh when Col. J. Frank Drake became president of Standard Steel Car company, later known as the Pullman concern, largest railway equipment builders in the nation. Like Col. Drake he became closely associated with the business interests of the Mellon family, of whom the late Andrew W. Mellon, secretary of the treasury, was the outstanding figure. He was once special representative for the Norton company of Worcester, joining the firm in 1914. Two years later he went to Washington, and for four years handled the abrasive field for the British purchasing department while attached to the United States army intelligence division. Born in Springfield June 23, 1867, he was the son of Richard F. and Cornelia (Howe) Hawkins. Attending Worthington Street school, he was graduated from Springfield high school in 1885, later attending Chauncey Hall school in Boston and . . . Technology. While at Chauncey Hall he began his military career in the school battalion, and was active in the military company at M.I.T. In 1890, he was named first lieutenant of Co. B, 2d regiment, and in 1895 was appointed regimental rifle practice inspector. In 1896 he was made adjutant, and later went with the regiment into federal service, serving in Cuba during the Spanish-American war. Three years later he was made a major on the staff of Gov. Winthrop Murray Crane, was reappointed on the staff of Gov. Bates and was one-time commander-in-chief of the Spanish War Veterans. He was a member of the Army and Navy club in Washington, D.C., and New York, and was once prominent in the Winthrop and Navassett clubs here. He leaves three sisters, Mrs. Thomas Dyer and Miss Ethel Hawkins, both of this city, and Mrs. Sidney Stevens of Brookline; a brother, David S. Hawkins of Concord; two nephews, John Edward Stevens of New York, and David Howe Hawkins of Concord; a niece, Mrs. Iris Hanilburg; two grandnieces, Miss Janet and Miss Iris Hanilburg, all of Brook-

Joseph E. Chandler died on August 19 in Wellesley, Mass. Under the caption "Noted Colonial Authority Dies," the Boston Herald printed the following notice: "Joseph Everett Chandler, authority on Colonial architecture, horticulturist and landscape gardener, died . . . in Wellesley . . in his 82d year. He was the author of 'Colonial Architecture of Maryland, Pennsylvania and Virginia,' 'The Colonial House' and other works. He had charge of the restoration of the Old State House, the Paul Revere House, the Old Corner Book Store and the House of Seven Gables. He supervised the erection of the Colonial Village at Springfield as well as numerous other public and private edifices. He was born in Plymouth, of Pilgrim ancestry and for many years resided at his home, 'Manalone' in Sudbury. He was graduated from ... Technology with the Class of 1889. He was a member of the Massachusetts Horticultural Society. He leaves five nieces and nephews, Marion Chandler of Cohasset, Albert C. Chandler of Plymouth, John H. Weeks of Newton, and Mrs. James D. Gregg and Warren C. Weeks of Wellesley Hills. ''

The address of William B. Willim is now 116 East French Place, San Antonio, Texas. - The sympathy of the Class goes out to two of our members, Ed Marsh, whose wife's death occurred on July 26 last, and Henry Howard, who met with a similar loss on October 7. The Boston Herald said: 'Under Mrs. Howard's guidance the association which she founded in 1921 to provide free books and magazines for American seamen, lighthouses and Coast Guard stations developed into a National organization known as the 'Floating Library of the High Seas' with 15 distributing centers throughout the Nation, which last year donated 424,000 books and 350,000 magazines to 10,500 libraries. Mrs. Howard also was the author of the 'Seaman's Handbook for Shore Leave,' a guidebook giving information about all the principal ports of the world." — WALTER H. KILHAM, Secretary, 126 Newbury Street, Boston 16, Mass.

1895

The key blueprints, listing the names of our mates who appeared on the 50-year-reunion photograph, have been mailed to all interested, for the purpose of refreshing your memories in fitting the names to the faces. File it with your photograph and plan to look at it before the 55th reunion in 1950. If any of you has not received his key, notify your Secretary. Probably there are some who could not attend the reunion but would like a copy of this celebrated picture; if so, they may secure one from Yoder.

It is interesting to learn of the war experiences of the sons of classmates. A recent letter from Charlie Tillinghast reports the following: Charles F. Tillinghast, Jr., was graduated from Exeter Academy and Harvard University, taking the Naval Reserve Officers' Training Corps course at Harvard. He received a commission in the Naval Reserve and joined the United States Fleet Reserve, reporting for active duty in September, 1940. He served in the heavy cruiser Vincennes in the Atlantic and the Pacific, convoying the Hornet, with General Doolittle, to the vicinity of Japan. He engaged in the Battle of Midway and Savo Island, where the Vincennes was sunk; then served with Admiral Halsey's staff in the heavy cruiser Boston until, at his own request, he was ordered to the antisubmarine school at Miami, Fla. Graduated from this school, he became a lieutenant commander and was assigned to command the destroyer escort Weedin, during January, 1944. Since then he has had convoy duty in the Atlantic and in the Pacific. His principal recent excitement was with the typhoons in the Pacific between the Philippines, Okinawa, and Japan; some of these typhoons were weathered and some dodged. He was commissioned a commander in the Naval Reserve on July 20 and plans to leave the Navy at the first opportunity. If all of us could get together and hear the personal version of such varied experiences, what an exciting tale it would be! We sincerely hope that Junior will continue to "weather the storms" and hit home soon. We share with Tilly the warranted pride in his son's performance.

During the present hectic reconversion period some of our mates are so fully occupied with swiftly changing business and industrial events that it is almost too much to expect them to drop their Secretary a personal line, in which all of us would be interested. Nevertheless, a line from any of you at any time will be welcomed. — LUTHER K. YODER, Secretary, 69 Pleasant Street, Ayer, Mass.

1896

Now that gasoline rationing is no more, Myron Fuller is all set to trek again, was planning to go to Florida from Brockton, starting about November 1, and expecting to hole in at Fort Myers or vicinity. He was taking a housekeeper with him and had hopes of getting a bungalow or an apartment. — The Secretary had a very pleasant week-end visit from E. C. Jacobs, professor emeritus of the University of Vermont and state geologist. Since Jacobs' time is now more or less his own, he had made a visit to his sister in Brookline, N.H., before coming to Brookline, Mass., for the week end of October 14 with the Secretary.

The Secretary also had a delightful call from Arthur Baldwin. Arthur had been making a little circuit to include Schenectady, Boston, and New York. He seemed to be in his customary fine form and reported that he was carrying on busily at his little ranchette near Charlottesville, Va. He had seen Walter Stearns in Schenectady and learned that Walter was getting ready to go South again for this winter with Mrs. Stearns, stopping off en route in Raleigh. Another item gleaned from Arthur was that Dr. Coolidge was scheduled to go on an x-ray lecture tour to South America. Coolidge himself, at the Secretary's request, has very kindly supplied the following additional details of the proposed trip, which is being made in connection with the 50th anniversary of the discovery of x-rays. Mrs. Coolidge is with him, and he will be the guest of the Brazilian Government. The entire trip will be made by air, and he is scheduled to speak at San Marcos University, Lima, Peru; the Chilean University, Sociedad Chilena de Radiologia, Santiago, Chile; the Argentinian Radiological Society, Buenos Aires, Argentina; the Atheneum of the School of Medical Sciences and the University National del Litoral, Rosario, Argentina; Central American University, Faculty of Medicine, Ministry of Public Health, Montevideo, Uruguay; Academia Brasileira de Ciencias, University of Brazil, Brazilian Radiological Society, Rio, Brazil; Engineering School, Paulista School of Philosophy, University of Sao Paulo, Sao Paulo, Brazil. He will also speak in Cordoba, Argentina.

Lloyd Wayne wrote from Indianapolis that his retirement continues, but that his time seems to be fully occupied with just one thing after another, especially little things. He had made a few little trips in Ohio and had made a half-day visit with his sister in Cleveland. He had included Cincinnati, where he saw many old friends from high school days on. He met Billy Andrew one noon and found Billy exactly as usual. At another time Wayne had been up to Lake Barber in northern Indiana for 10 days. Wayne reported that gradually over the years he had been eliminating a lot of excess baggage on his frame; he feared that

if the process continued, there might come a time when he would have to use some padding to handle satisfactorily his annual job of dressing for the role of Santa Claus

at Christmas.

Our peripatetic Rear Admiral Bakenhus continues his movements unabated, and he always seems to have something of interest to report. One item, not too pleasant from his point of view, was a little accident which happened at the Pennsylvania Station in New York City. One of the steel plates that is let down from the car steps jumped up just as he reached it. Both his right and left shins were slightly cut, so that they bled, and his elbow was bumped and gave him trouble for several weeks. He reported the accident without making any claim, but the railroad apparently spontaneously awarded him damages, which he proposed to turn over to the Alumni Fund. Bakenhus had seen Gaylord Hall once or twice, as Gaylord is a member of the Salmagundi Club, located next door to Bakenhus' residence on Fifth Avenue. That is a club of sculptors and painters and includes instruction in life classes. It is not. clear how Hall qualifies for his membership. Bakenhus does not seem to have time even to think of a vacation, or at least he had not done so when he wrote in July, directly before his departure for Detroit to attend a board meeting of the American Society of Civil Engineers. He told also of another event that damaged his financial structure rather than his physical well-being. It seems that the visit of General Eisenhower meant a lot to Bakenhus and, as the parade was to pass his apartment windows on Fifth Avenue, he hurried home from his office. He had to work his way through a packed crowd when he left the subway at 14th Street and Broadway. He got a glimpse of the General at that point as the procession was headed downtown, and later from his apartment as the procession went back uptown. What impressed him most, however, was that when he reached home from the subway he found that his pocket had been picked in the crowd at the subway station. While he was wondering what might have occurred, his telephone rang (only half an hour after he had left the subway) and the speaker, who was Captain Volk of the Police Department, reported that he was returning the wallet, which had been found by an unidentified woman at 14th and Broadway. Bakenhus made substantial appreciation for the fine, rapid work of the Police Department, and it was especially interesting that nothing had been removed from the wallet except all Bakenhus' gasoline rations, which was particularly sad for him.

In Detroit at the board meeting Charlie Trout was also present as treasurer of the organization. Trout has been connected with the Society of Civil Engineers either as director or treasurer since 1934, which is a record, and incidentally established a reputation for himself as watchdog of the treasury. Bakenhus' stay in Detroit was so full of business that he did not have a chance even to telephone to Mark Allen. The board worked the first day until 6:30 P.M., when dinner followed and then a visit to the Rackham Memorial Building, which is the headquarters of the Engineering Society of Detroit. On the second day the meeting started even earlier and lasted

through the afternoon. Reuben's versatility and activity is illustrated by remarks that he made at the Women's Poetry Society contest some years ago. It would not be surprising to learn at any time that he had been judging a Miss America beauty con-

Although Bakenhus failed to talk with Mark Allen in Detroit, the Secretary has what seems to be good evidence, in the form of a marked copy of the July, 1945, issue of Scouting, sent by him that Mark is still doing things. That issue gave a full account of the National Council meeting of the Boy Scouts of America at which Paul Litchfield was one of the four men to receive the Silver Buffalo award. It dealt with Paul's interest in the Boy Scouts, originating way back in 1912 when Paul was on a ship bound for England and had as fellow passengers the members of the Canadian Boy Scout troop. The presentation of the Silver Buffalo award was made with the following citation to: "Paul W. Litchfield, . . . industrialist, one of the founders of the Akron, Ohio, Area Council, a leader in the development of Scout troops sponsored by industrial organizations, member of the executive committee of Region 4, and of the National Executive Board since 1940, a leader in the development of the Air Scout program, who organized and equipped the first Air Scout Squadron in Akron." The actual presentation was made by Eddie Rickenbacker, World War I ace. The public press also featured Paul Litchfield's 70th birthday on July 26. That date also marked his completion of 45 years as an executive of the Goodyear Company. To celebrate the dual event E. J. Thomas, President of the company, presented Paul with a jeweled pin emblematic of the services that have won him the title of dean of the rubber industry. The public announcement also recited Litchfield's various accomplishments in the rubber industry and referred to his

Paul F. Johnson, that superactive member of the Class of 1898, the center of whose orbit is Altadena, Calif., has supplied interesting information regarding some of our California classmates. He had made a call on Fred Ashley, and they talked for at least two hours. He found Fred living alone in an upper apartment on what seems to be an ordinary city lot, but Fred spends most of his time working in the back yard, which overlooks a surprising scene. The few feet of level ground immediately behind the house drop steeply down 50 or 60 feet to the bottom lands of the Arroyo Seco. There are stairways, paths, and little architectural knickknacks on the way down and at the bottom. Fred spends most of his time improving and adorning the back yard, and opportunity still exists for him to continue busy a long time. Fred was found to be in good health, but as he does not have a usable car, he does not get away from the house very much, except to market. He takes his lunch down with him to the back yard to save the climb back to the house; and his old car, which is apparently in retirement, has been fixed up with a table on which to eat his lunch and also a place in which he takes a nap. The garden has a sun dial mounted on a platform made of tile, brick, and concrete. It is a sort of genealogical chart of the families of Fred's four grandparents,

and he has made up a very interesting

genealogy of those families.

Paul did not actually see Dr. Chenery in Los Angeles, but had corresponded with him, and Chenery told how he had been in Oregon for 18 months and was glad to be back in Los Angeles, where he was very happily situated with his foster son, Austin, his wife, and their charming son of 14 months, James Winthrop. Since his semiinvalidism makes Chenery unable to drive a car or walk to the bus stop, he is forced to stay at home most of the time. — Paul's communication to Russell Porter brought a reply to the effect that Russell still had his office in the Astrophysical Laboratory at the California Institute of Technology in Pasadena, and his office hours were usually from 9:00 A.M. to about 3:00 P.M. Later on, Paul made a call on Russell in his office and had a most pleasant visit, talking over mutually interesting subjects such as travel, telescopes, and astronomy. - Paul had written Victor Shaw, Jack Eynon, and Dr. Leon W. Mansur. At the time he reported to the Secretary, no replies had come from Eynon and Mansur, but he had received a characteristic live wire response from Shaw.

George Hatch tells the Secretary that he and Mrs. Hatch have visited the East Bay Lodge in Osterville but doubts whether he will be able to attend the reunion which we anticipate will be held there next June. — A letter from Henry Waterman in Yar-mouth, N.S., says that he is counting on being with us next June and suggests only that there be plenty of opportunity for the whole crowd to have sessions together so that the boys can all become even better acquainted. - Lythgoe continues his writing; the latest material the Secretary has received from him is a reprint of his article in the Journal of Milk Technology for March-April, 1945, which is entitled "Routine Examination of Milk for Added Water' and tells of the work of the division of food and drugs in the Massachusetts Department of Public Health, of which Lyth-

goe is director. Herbert Newell has supplied a very interesting, newsy letter on his present doings. In recent years he has been living in Portland, Ore., where, in July, 1942, he bought a home. He had the misfortune to lose Mrs. Newell last February. Her death came rather suddenly when she was apparently on the road to recovery following an operation 15 days before. His son, Herbert, Jr., had been in the Army two and a half years and overseas 15 months. For fully six months he was in North Africa, mostly at Oran; but since January he had been in Italy, and at the time Newell wrote was stationed at Naples, engaged in ordnance work. After graduation from Stanford Law School he had taken his bar examination at San Francisco in the fall of 1941. The boy is five inches taller and weighs 50 pounds more than his father. Newell reached the age of 74 in August, but reported that he is still blessed with excellent health, with his faculties all practically unimpaired, and is still chewing with his natural teeth. His weight today is less than 10 pounds more than it was 50 years ago, and we all recall that there was no surplus fat on him in his student days. Altogether he feels that his life has been full and that the world has been very good to him. At the time he

wrote, he was dreaming of the removal of gasoline restrictions which would allow

him to do some touring.

Harry Tozier and Mrs. Tozier went to Martha's Vineyard, as was reported in the July issue, but although they found the island most charming, their rather small hotel quarters, two flights up with no elevator, were decidedly unappealing. Unable to find anything better, they decided, with regret, to leave the island, and go to the Weldon Hotel, in the delightful New England city of Greenfield, Mass., where they had been most comfortably put up. Their future plans were indefinite, but they expected to remain in Greenfield until autumn, or possibly longer. They apparently still have it in mind to do more or less traveling when conditions make travel attractive again. - Malcolm H. McGann is no longer at the Army Base in South Boston, Mass., and is now to be found at his home, 48 King Street, Reading, Mass. Norman Rutherford, who has been located for some years at Central Islip on Long Island, finally decided, because of failing eyesight, to move to 233 Nassau Street, Brooklyn, N.Y., where he will be living with a family the members of which have been summer neighbors of Norman's for the last eight years, with the result that a strong mutual attachment has developed between them.

The Alumni Office has reported that William E. Field has not received mail addressed to him at Fort Wayne, Detroit. A little sleuthing, however, disclosed that Field had been transferred, his new address being 10 Addoms Street, Plattsburg, N.Y. Field has been with the U.S. Army Quartermaster Department for many years and was for a considerable period stationed at the Army Base in South Boston. - The Alumni Office also reported that mail addressed to Joe Pillsbury in Vancouver had been returned, and here again sleuthing disclosed that Joe has retired as a member of the Workmen's Compensation Board of British Columbia and has also changed his home address. A communication from Joe himself gave his new address as 1945 Haro Street, Vancouver, B.C. He said that he has more time on his hands and earnestly hoped to attend our 50-year celebration next June.

It is with regret that we have to report the death of Henry Disston, which occurred on August 29, at a hospital in Bar Harbor, Maine. Disston was former president and chairman of the board of the tool manufacturing firm of Henry Disston and Sons, Inc. He was with us for three years as a student in Course V. He was born on December 1, 1873, and had attended Penn Charter School before coming to Technology. He became president of his firm in 1930 and was advanced to the position of chairman of the board in 1939. He was a member of the Philadelphia and New York Racquet clubs and maintained for many years a large hunting lodge at Thomasville, Ga. For the last 40 years he had lived at the Bellevue Stratford Hotel in Philadelphia and spent his summers in his summer home at Bar Harbor. His first wife, the former Edith Roberts, died in 1922. In 1939 he married Mrs. Gladys Davies Teague Groome of Philadelphia, who survives him.— CHARLES E LOCKE, Secretary, Room 8-109, M.I.T., Cambridge, Mass. John A. Rock-WELL, Assistant Secretary, 24 Garden Street, Cambridge, Mass.

We greatly regret that we must announce the death on June 13 of Fred E. Busby, V. We are privileged to reprint the following, which appeared in the columns of the New Bedford Standard-Times of June 13: "Fred E. Busby, 70, who retired four years ago after 22 years as a New Bedford Textile School department head, died suddenly . . . of heart failure at his home, 59 Rotch Street, Fairhaven. He had been in poor health three years. Mr. Busby came to the New Bedford Textile School in 1919 as head of the chemistry, dyeing and finishing department after 17 years of active work in the textile field, including superintendence of the Arnold Print Works. A graduate of M.I.T. in 1897, he taught chemistry at M.I.T. from 1899 to 1902. Many New Bedford Textile School graduates have attributed much of their success to his excellence as a teacher. Mr. Busby was a native of Adams. He was a sharpshooter in the State Militia during the Spanish-American War. A member of the Unitarian Memorial Church, Fairhaven, he was a Mason, and a member of the American Chemical Society and other chemical organizations. Survivors are his widow, Mrs. Jennie A. (Blackinton) Busby, whom he married in 1912; a son, Lieutenant (j.g.) Edward D., U.S.N.R., on duty in the Pacific; a daughter, Mrs. Cloyd L. Pennington, now in Fairhaven, and a grandson, Fred T. Pennington." — John A. Collins, Jr., Secretary, 20 Quincy Street, Lawrence,

1898

A local dinner was held in the Silver Room of Walker Memorial on October 19. Eleven members were present: George Treat, Ernest Russ, Arthur Blanchard, Simon Fleisher, Charley Wing, John Dodd, Elliott Barker, Joe Riley, Henry Sullivan, Fred Dawes, and George Cottle. All enjoyed George Cottle's movie films from his last trip, through Guatemala and Mexico. He visited the new volcano, Parícutin, shortly after it erupted and when the cone had risen 2,500 feet above the level of the original cornfield. His pictures of the eruption were very impressive. Ernest Bragg, in sending regrets, remarked that the last time he had attended a local dinner, his son was with him. The son is now a captain in the Medical Department and stationed at Camp Oglethorpe. Bragg himself was in Florida last winter and three years ago visited the national parks and took many Kodachrome pictures, both movies and stills. Bragg has just commenced his 47th year with the Draper Corporation, and when he is not busy with them, he spends considerable time with canvas and oil paints. His letterhead reads: Ernest A. Bragg, photographs, photographic equipment, and photo supplies, 17 South Main Street, Milford, Mass.

Frank Perry sent regards and reported that he had finished defense work at Advance Base Depot, Davisville, R.I., on September 29, after four years, seven months, with Merritt-Chapman and Scott Corporation and George A. Fuller Company. He is now designing a factory building for Armbrust Chain Company. B. A. Adams confirms the report that he had retired on July 1 after 45 years of service with the public

schools of Springfield, Mass. We have previously given reports of the testimonials from his fellow citizens on his approaching retirement. M. DeKay Thompson sent regrets from Amherst, where he still continues the emergency job of teaching at the college. Appleton Packard wished he could be with us but is laid up at his sister's house and has not been out of Andover in three years. Ed Chapin had a previous meeting of a national society of his textile brethren at which he himself was scheduled to speak. He reports a recent letter from Earle Emery, who said to give his best to the gang. Greetings were sent to our meeting by Maurice Delano, Dan Edgerly, Roger Babson, Charley Winslow, F. M. Kendall, and Harvey L. Currier. Ernest Russ reported that he recently had a visit from Howard Bodwell. As we have already noted, Howard had retired from the steel business and thought he was set for life in southern California. But with the beginning of the war effort, he returned to Pittsburgh and got back into harness. He now plans to retire again, and this time permanently, next March 1, his 70th birthday. Charley Wing had had a recent visit from Carl High of Partridge, Kansas, where the latter has a large farm.

Arthur Blanchard stated that he was leaving in a few weeks for California, where two of his children have established their homes, and that, although he fully intended to come East again, at least for visits, and certainly for our 50th reunion, he could not carry on the job of class secretary by remote control. The members present unanimously selected Ed Chapin to be secretary, not because he was not there to defend himself but because they all wanted him. We do not believe the Class will object that 11 members is too small a quorum, and we are sure a vote of the whole Class would be just as unanimous for Ed Chapin; the difficulty came at lunch with Ed the next Monday. He had plenty of arguments why he should not serve, the last one being that he could not possibly do so now, but that a year later it might be possible. The old Secretary pounced on that and agreed to try to serve until next summer, and so it was settled. It was the undivided opinion of the 11 members present that a class-wide notice should be sent out for a gathering on next Alumni Day of all 1898 men who can come to Boston. For the 50th anniversary of our graduation in 1948, when, according to custom, we shall be prominently featured and shall be the luncheon guests of President Compton on Alumni Day, everyone, of course, will make a special effort to get back to Boston, and arrange-ments will be made for a real class reunion at some resort hotel or country club.

We have lately learned that our classmate William S. B. Dana had left \$500 in his will to Technology. Dana was graduated in the architectural course. He was a musician of note. He had spent a considerable part of recent years in Italy. We think it was very fine of Dana to leave this gift to the Institute. In this connection, we are reminded of the plan originated by Ed Chapin, who is our class representative on the Alumni Fund committee. The plan is that, instead of giving so much each year to the Alumni Fund, those who can spare it now should make a capital gift, and from then on the interest on the capital

gift should be added each year as a contri-bution to the Fund and credited to our Class. We simply make the suggestion that any '98 man leaving money to Technology in his will specify that it shall be added to the Alumni Capital Fund and that the interest from it shall each year be counted as an 1898 contribution to the current Alumni Fund.

Roger Babson called his 32nd business conference for September 28 and 29. Part of the invitation sent out for the final session on Saturday afternoon gives an idea of the nature of the conference as follows: "To My Friends and Neighbors — This is an invitation to the inauguration of the new chancellor, Mr. E. J. Kulas. The subject of the afternoon will be: — 'What About Your Business and Your Job in the Years Ahead?' We today have control of Europe and Asia. Will this be an asset for us which will give our people more and better jobs or are we like the unhappy man 'who had the bull by the tail'? Will these 800,000,000 people whom we have freed become our customers or become our competitors? The answer to this question will be the main factor in determining the economic future of every person receiving the enclosed tickets. To help you answer this all-important question, Mrs. Babson and I have secured as speakers for next Saturday these authorities: (1) Wing-Tsit Chan, representing China; (2) General Victor A. Yakhontoff, representing Russia; (3) Mac Maki, representing Japan. Following these, Mr. E. J. Kulas, President of Midland Steel Company, representing American businessmen, will in his acceptance address summarize the situation as he sees it. This is a great treat for us all. I shall preside and say a few words myself."

Ed Chapin has been adding to the circular letters to classmates about the Alumni Fund a personal appeal to send the Secretary a letter telling of their own activities. Letters from Charlie Winslow and Van Rensselaer Lansingh were published in the July issue of The Review. This month letters have been received from Bob Allyn and Roger Babson. Inasmuch as the space allotted to us for this month is well filled, these letters will appear in the next issue of The Review. Who will be next to keep the hopper of '98 class news brimful and overflowing? — ARTHUR A. BLANCHARD, Secretary, 187 West Chestnut Avenue, San Gabriel, Calif.

1899

Your Secretary spent his vacation in flying down to Memphis, Tenn., to join his son, Leighton R. Rickards'33, a lieutenant in the Navy, who had just com-pleted a 16 weeks' course at the Aviation Engineering Officers School of the Naval Air Technical Training Command. His orders were to proceed to Oakland, Calif., after a two weeks' leave, there to get further orders, presumably for over the Pacific. This trip was made by automobile through Oklahoma to New Mexico, Colorado, Utah (Idaho to Yellowstone Park on the side), and thence through Nevada to California. At Salt Lake City he was best man at his son's wedding, thus acquiring a fine daughter. The return was made by plane — a 20-hour trip with a wild electrical storm over New Mexico thrown in for good measure.

While in Salt Lake City, I called on Mrs. Sylvester Q. Cannon and was most charmingly and gracefully received. I obtained a lot of interesting data regarding Sylvester, who died about two years ago, and will relate it in a subsequent issue.

Robert Frazer, IV and IX, formerly of London, England, is now located at 326 East Los Olivos Street in Santa Barbara, Calif. David C. Mills, IX, formerly of Westport, Conn., is now living in Darien. Gerald B. Street, II, formerly of Wilmington, Del., is now at the Biochemical Research Foundation at Newark, Del.

Dwight Farnum, whose death occurred on June 5 from a heart attack, had spent most of his years since graduation from Technology in Colorado, Utah, Arizona, and New Mexico, in the leasing and operating of mines. The solving of problems in concentration and flotation was his particular bent. Dwight retired some 10 years ago and had since been located in the San Gabriel Valley at Temple City, Calif. Dwight's forebears came to this country in 1632. — BURT R. RICKARDS, Secretary, 381 State Street, Albany, N.Y. ARTHUR H. Brown, Assistant Secretary, 53 State Street, Boston 9, Mass.

1900

A nice letter from Hal Jouett follows: "I was glad to receive a copy of your class letter about the 45th reunion and am very sorry I was not there. I missed seeing several men I knew well in college, whom I have not seen for many years, among them being Gibbs, Lawley, and Leary. If I could have driven to the Cape, I think I should have been with you, but I don't relish traveling by train under present conditions and didn't want to be away for several days. Russell did a nice job of reporting the affair, and the committee is entitled to many thanks for arranging and carrying out such a successful reunion. The group picture is very good, thanks to Patch; without the key I should have had trouble in recognizing some, but with it I can see the old expression in all. There is plenty of gray hair in evidence.'

Leeds came through with this letter: "Ever since your notice of the class reunion was received, I have repeatedly put off writing you, hoping against hope that something would materialize to justify my coming on. For it is my great regret that in all these years I have never been able to attend a Technology reunion. My trips East while I was on the board of direction of the American Society of Civil Engineers were always at the wrong time of year, and if I could steal an extra day, I ran over to Boston hastily to see my brother and then had to rush back. True, I have had to go back to Washington several times during this war in connection with engineering work which our firm was doing for the Army or Navy, but these trips were always urgent and likewise at the wrong time of year. Right now, with railroad facilities as congested as they are, and the ever increasing urgency of demand for them, I should have had hard work to quiet my conscience if I had come East purely for pleasure. There was a possibility that the committee on postwar construction of the American Society of Civil Engineers might hold a meeting in the East, which would have been sufficiently urgent to justify my attendance. If so, I should have tried to combine this with the reunion. But word came making that impossible. As consultant for the division of lands of this state, I had to testify in a quiet title suit which was set for trial from June 24 on. So all I can do is send my deepest regrets and my best remembrances to all who have not forgotten me.'

George Leach, whom we have missed so much lately, wrote in as follows: "Thanks for your cordial reunion invitation, strongly seconded by Russell and Jackson. I was sorry that I could not go, and it was not that I am afraid that attendance at a 45th college reunion admits too much. My excuse was that I had house visitors at that time, including two grandchildren with whom I wished to get acquainted. You requested a report from those who could not attend. Here's mine: No special personal news except that I have no thought of retiring, at least voluntarily. But I do boast a lovely family - wife and three children. The two boys are in the Navy, and the older one has made his 12th landing at Okinawa. The other is a naval aviator. On the chance that other classmates will be as brief, I volunteer the following true stories about some of them. George Russell, because of his old Company A military manner perhaps, was stopped on the street the other day by a middle-aged lady who asked why he was not in the Army. He looked her over and replied 'for the same reason you are not in the Follies.' Bill Jackson recently attended a movie with a lady believed to be his wife. From a box of caramels they were enjoying he dropped one on the floor. He made a wild hunt for the caramel under the seat. When the lady remonstrated that it was foolish, since there were plenty more, he commented, 'But that one had my teeth in it.' Stanley Fitch was picked up the other day while demonstrating that his car would still travel at 75. At the desk the police sergeant asked his name, and he replied John Smith.' When told that that would not do, Fitch said 'William Shakespeare,' to be informed by the sergeant, 'That's better - you can't get away with anything around here. Harry Thayer was all for chemistry in the old days. He is still interested in it now that he lives near Hollywood, Calif., where he has come to the conclusion that the greatest contribution to mankind made by chemistry was blondes.'

Hughes sent in - "Greetings to the members of the Class of 1900. I trust the years you have lived through have been happy and prosperous, and I hope that the coming years will bring us all the pleasant dreams of success and accomplishment we had as students at Technology." Hapgood wrote in to inform us that he was to take off for his Florida home on October 16. He has not been on the top this summer but expects to recover fully while in the South and sends best regards to all members of the Class. - McCrudden, V, now with New England Mutual Life Insurance Company, has been doing some figuring in three dimensions and has reached the conclusion that the office he now occupies takes up the same space as the qualitative analysis laboratory in which he studied in old Walker—an item for Believe-It-or-Not

Ripley.

A part of Holbrook's letter follows: "I do not remember whether I have written you since my retirement on pension from a 41year stretch with Armour and Company. This took place in September, 1944, at which time I had arrived at the scriptural age of 65. I spent most of the fall and winter doing all the odd jobs that had accumulated during those 40 years or so, and dreaming of all the prospective good times that we hoped were going to materialize in the future, including at the head of the list our 45th reunion. Unfortunately, the dreams had to be postponed. In the spring I got mixed up in a war job, and am associated with my son in a business which he thought I could help him promote and organize, and so far the results seem to justify the expectations, so it looks as though I had started on the second 40-year stretch in a new direction. We are building equipment for handling waxes and plastics for corrosion control, which has come to be so important in many lines, especially for government purchases of metallic material of all sorts for overseas delivery. And since the plastics industry is in its infancy of postwar development, it seems reasonable that we should grow up with it in the future. Please remember me to all the gang and tell them that we are hoping for better luck in 1950, when we have every prospect of attending.'

The Alumni Office has sent notices of the death of Hortense W. Lewis of Boston on February 22 and of Roy H. Bolster on September 8, 1943. — C. Burton Cotting, Secretary, 111 Devonshire Street, Boston 9,

Mass.

1901

Farnum Dorsey reports that he retired on June 1 from the Socony-Vacuum Oil Company at 26 Broadway, New York City. He has been connected with that organization for many years and has been trademark counsel and assistant patent counsel for the company during the latter part of the time. He writes that his daughter, Alice, is in service as an Army nurse. — A note from Archibald Klieves runs as follows: "Although I still maintain my architect's business, I have not been active for some time. I am one of the commissioners of the 'Wheeling Housing Authority,' a low-rent project for slum clearance. I was not a member of the commission until after the buildings were completed and found many things that required correction. Looking after these corrections is my share of the Commission's work; so I am still not entirely out of contact with the building trade.

The last we heard, Louis Williams was having a "glorious" time as manager of the Detroit office of the Engineering Societies Personnel Service, "trying to do something worth while without violating War Manpower Commission regulations." He says he spends a good part of his time listening to other engineers' troubles and trying to help them. — Ed Fleming writes: "I have lately completed 39 years' service with American Smelting and Refining Company. The office is in Salt Lake City, but I spend most of my time visiting western smelters, where I look after research developments. I have a wife and daughter at home in Los Angeles and expect to retire there in a year or two."

I regret to report the deaths of two classmates: Mary P. Anderson on March 8, and Carl R. Hallstrom on September 29, 1942. Mary Anderson had lived until recently in East Berkshire, Vt. Carl Hallstrom had lived for some time in Venice, Calif.

I have received a letter from Bob Derby concerning the 45th reunion of the Class next June and in particular expressing his opinion as to the place to hold it. I am very pleased to get this letter from Bob as he has covered the subject so well that quoting it will be an excellent way to remind the members of the Class to make their plans to attend. He writes: "When I compared notes the other day with Henry Chambers, we both agreed to write to you with regard to the 45th reunion of the Class, which should be pulled off this spring. It seems to me nearly time to start the ball rolling if we hope to get a good attendance. The date, I suppose, will be in early June, but what interested us particularly was the place, and we found that our ideas were pretty much alike. We felt that a site such as Oyster Harbors, for instance, or a more or less similar place which we could have largely to ourselves, was a far better proposition than a large hotel near Boston such as the New Ocean House at Swampscott, where our last party was held. Possibly the Boston contingent prefers a place of this type (Note: Roger Wight does) as being more convenient, but after all, over 50 or 60 per cent of the men, I think, come from fairly far away at a greater sacrifice of time and money and should have a good deal to say in a decision on the subject. Of course, there may easily be a considerable difference of opinion, and I would suggest a letter or postal card canvass on the subject, weighting the votes of the men who expressed every intention of coming, wind and weather permitting. The letter or postal might also cover the date of the meeting and any other subject on which an expression of opinion was desired. How are you these days, and what are you doing with yourself? I am reverting to type on the farm, have not worn a hat since the first of May and seldom a tie. I am doing a little market gardening, raising a few chickens and also rabbits, which I learned to like during my Australian sojourn.'

I am planning to enclose a return postal with the annual class letter about February 1, so that all members of the Class may indicate whether they expect to attend the reunion, or not, and express a choice as to where it shall be held. I think that date will be just about far enough ahead of the reunion. A follow-up will be sent in May, say, to those who have indicated any intention of being there. Also, a reminder will be included in the June class notes in The Review. By February 1 we should know the date of Alumni Day and so be able to set the dates for our reunion. It will undoubtedly be in June, but may be in the latter part of the month. This year it was June 23. — Guy C. Peterson, Secretary, 788 Riverside Drive, New York 32, N. Y. THEODORE H. TAFT, Assistant Secretary, Room 3-266, M.I.T., Cambridge 39, Mass.

1903

Two members of the Class have made the news since our last report. D. S. Reynolds, Vice-president of the Boston Con-

solidated Gas Company, was elected president of the New England Gas Association. W. E. Mitchell, Vice-president and general manager of the Georgia Power Company, was elected president. He has been connected with the Georgia Power Company since 1927, coming to Atlanta from the Alabama Power Company, where he had been electrical engineer, operating manager, and vice-president. Early in the year, he was given an assignment in Europe under the direction of the Secretary of War, as head of a commission to evaluate the effects of strategic bombing on power plants and other electrical facilities in enemy-occupied countries — the information thus as-sembled to be used in the war against Japan. Earlier in the war, he served as vice-president of the Rubber Development Corporation. The Georgia Power Company is that state's largest business, serving 575 cities, towns, and villages in an area of 48,000 square miles, and 64,000 families. It also provides trolley and bus transportation in Atlanta and bus transportation in Augusta, Macon, and Rome. Mitchell is prominent in many civic activities, in addition to being president of the Atlanta Chamber of Commerce. We are indebted to the Atlanta, Ga., Journal for this information sent us from the office of Professor Locke'96. - Frederic A. Eustis, Secretary, 131 State Street, Boston 9, Mass. James A. CUSHMAN, Assistant Secretary, 441 Stuart Street, Boston 16, Mass.

1905

The deaths of Mackie, VI, Tebbets, II, Hooven, III, and Cline, V, were briefly detailed in the last issue. We now have newspaper clippings as follows—from the Milwaukee Journal: "Mitchell Mackie, Milwaukee capitalist, died in his sleep . . [on June 21] at his farm home in Washington county near Richfield, the former Washington County Hunt club property. . . . He was 63. He had been suffering from heart trouble since last Dec. 6. Mr. Mackie was president of Central Office Building, Inc., and Mitchell Properties, Inc., a trustee of the Northwestern Mutual Life Insurance Co. and a member of the firm's finance committee, a director of the Northwestern National Life Insurance Co. and of Milwaukee-Downer College and the Layton Art Institute. After graduating as an electric engineer from the Massachusetts Institute of Technology, Mr. Mackie became associated with the National Brake & Electric Co. of Milwaukee. Later he became an officer of the Waukesha Motors Co. and the Federal Steel Sash Co., both of Waukesha. He went overseas with the United States army in the last war, rising from captain to lieutenant colonel. Mr. Mackie was the son of the late Dr. William Mackie, a famed surgeon. Surviving are his wife, Janet; three daughters, Mrs. John Mann, Mrs. George Kasten and Mrs. Henry T. Mather, and two sons, Maj. John M. Mackie and William Mackie."

From the Bulletin of Temple Beth-El, Glens Falls, N.Y.: "On July 26, 1945, Max Cline was suddenly taken away by death from his family and from his numerous friends to whom this loss has come as a terrible shock. . . . A large congregation was assembled at Temple Beth-El where the Funeral Services were conducted by Rabbi Kurt L. Metzger. A special contri-

bution was made during the Services by Mrs. Carl Bronne, who rendered a beautiful solo fitting the occasion. In his eulogy Rabbi Metzger mentioned three outstanding qualities of the departed that made us respect him, look up to him and love him. To Max Cline religion meant only to do justice and to love mercy and to walk humbly with God. In order to see these lofty ideals perpetuated in coming generations, he became a most ardent and instrumental worker of our congregation. In recognition of his tireless labor, his wisdom, and his sincere religious zeal, the rare distinction of 'Honorary President' was bestowed upon him. How inspiring was that happy relationship between him and his family. Indeed, anyone who had the privilege to visit him in his home could sense the bliss that emanated from there and left it enriched by the warmth of his rich personality. For 40 years being chemist of the Research Laboratory of the International Paper Company, and at last the chiefchemist of the greatest paper concern of the world, he had acquired a most outstanding name and reputation in this particular field of chemistry. As a scientist he felt and believed that science and religion do not contradict each other, but rather both help to explain and solve the great problems of the Universe. At the place of his work, God Almighty passed His hand over his countenance and put out its light. In the hearts of his family and of our congregation his name will live on as a lasting memorial of blessing and as a shining example of wisdom and loyalty, of unselfishness, goodness and love.

From a letter by Foster P. Doane, Jr., '20, a business associate: "I am writing to you about the sudden passing of one of your classmates, Max Cline, who died on July 26 from a heart attack. I first met Max in 1930, when I became associated with the International Paper Company, where he held the position of chief chemist. We soon became good friends, but it took years really to appreciate his fine character, kindliness, sincerity, and ability. Max was born in Russia on March 17, 1882. When he was quite young, his parents came to this country and settled near Boston, where he grew up. He was graduated from Technology with the Class of 1905 and in September, 1905, joined the newly organized bureau of tests of the International Paper Company, at Glens Falls, N.Y. Here his training and keen mind quickly brought him recognition. He is the author of the section on the refining and testing of pulp in the Manufacture of Pulp and Paper, the bible of the pulp and paper industry of the United States and Canada. Many of the testing procedures universally used throughout the industry today were developed by him. Max was not only a leader in his profession, but in civic and religious affairs as well. He was founder and president of Temple Beth-El of Glens Falls. He is survived by his widow, Ella Aronson, whom he married on June 9, 1908, and two sons: Leo E. Cline, a lawyer of Glens Falls, and Dr. James E. Cline, of Boston, Mass., chief chemist for the Beacon Company. Max is a son of whom Technology may well

came to a community and left it a better place in which to live." From the Greensboro, N.C., Proximity

be proud. He not only had ability, but he

Textorian of March 16: "... Albert Otis True, 2631 Church Street road, civil and sanitary engineer for Proximity Manufacturing company for the past 23 years, ... died Friday, March 9, following a brief illness. A native of Massachusetts, Mr. True was a son of the late Colonel Edward A. and Jane M. True. He was graduated from Newton public schools and ... Technology. He served as captain of engineers during World War I, and was a member of Holy Trinity Episcopal church, Henry Butner Post, American Legion, Forty and Eight club, American Waterworks association, and American Society of Civil Engineers. In January he was awarded a life membership in the latter organization. He is survived by his wife, the former Charlotte Elizabeth Bishop, of Rensselaer, N.Y."

Our Class Agent, Grafton Perkins, chides your Secretary for waxing enthusiastic about our showing in the Alumni Fund (as of April) as follows: "Thanks for your kind words about Perkins and O'Connell. But praise for our work on the Class Fund and satisfaction in the achievement of 1905 is painfully undeserved. You mention our production of 346 per cent of quota. That looks grand on paper and is strictly true. But unhappily for our self-satisfaction, this resplendent showing is due to one magnificent gift, in itself almost three times what the rest of 1905 gave. Without this special contribution, 'the best class of all' would indeed have 'done it again.' That is, 1905 would have again taken its normal position well down the list, with 92 per cent of quota instead of 346 per cent. So far this year 'the best class of all' is in a tail spin, with contributions actually under our all-time low of 1943-1944, when we had no class agent at all.

The Perkins family yields little novel information. The number one son is still shuttling around the Pacific as executive officer in a big attack transport (personnel), having been in five or six of the major attack landings and in a lot of reserve landings as well. Our number two son is out of Burma and now in China with the soi-disant "cloak and dagger boys" under the Office of Strategic Services. The old folks weathered the cigarette shortage without casualties and now continue the even tenor of their way, paying our taxes, yearning for bacon, and seeking to grow old gracefully." Therefore we should pick up our laurels and support Perk by doing our extra bit now. Will you?

Andy Fisher is authority for the statement that Bill Ball is a deposed class golf champion. It seems that on a recent visit to Woods Hole, Prince Crowell introduced Bill to his home course and trimmed Bill badly. Incidentally, your Secretary, his wife, and their Navy daughter were guests of Prince and Ethel one Saturday in July and saw Prince win a thrilling boat race by 2½ minutes. Afterwards Prince took us landlubbers out for a quiet sail in the harbor, saw a skiff adrift somewhere off the shore of Martha's Vineyard and "just had to save it." Result: we returned home in borrowed dry clothes. Prince holds his rank as class admiral by winning 13 of 19 starts in the Cape Cod class this summer. Speaking of golf, the Boston Herald in a write-up of the annual Father and Son Golf Tournament held at the Winchester Golf Club had this to say about one

of our champions: "First to tee off at 8:45 this morning were the Goodales from Woods Hole, Father Percy and Son Ben, and the fact was as significant as throwing out the first ball in baseball. The Goodales are among the genuine old-timers of the tournament, have competed in all but one or two, and it happens that Papa Goodale was distinguished as the only individual back in the field as a former winner. The senior Goodale won the tournament as far back as 1923, competing with his oldest son Bob, now a Lieutenant in the Marines. — John C. Eadie, VI, writes from Edinburgh, Scotland: "The war news is splendid, and though things are tight and supplies are hard to get, the relief from bombing and air raids is very great, something you will hardly realize. We have our petrol ration back and can use our cars again, but in my case, I get only five gallons a month, so you see I shall not travel very

I saw Bert Files on the street recently. Bert decided to beat the egg scarcity by raising his own, so picked out 19 nice chicks, fed and cared for them diligently on his farm in Hingham, only to have 17 of them turn out roosters. Anyone wish to write Bert on sex identification of chicks? - Roy Allen dropped in early in October for a brief call on his way back to New York, where he has to clean up office details on his Chile assignment with the Defense Plant Corporation. We learn through the newspapers that Professor H. W. Keith, on the teaching staff at the Institute for more than 30 years, will retire on January 1 next as head of the department of Naval Architecture and Marine Engineering, which he has directed since 1937. Henry, as you may know, has been consultant at the Fore River plant of the Bethlehem Steel shipbuilding division in Quincy, where he was responsible for many launchings, including some of our largest

battle wagons and carriers. Here's a belated story from Ted Steel, written on June 1: "Our son Robert is a research engineer in process design with the Standard Oil Company of Indiana at Whiting, Ind. He got his B.S. in chemistry at Shoals and then went to the Institute for graduate work (under Doc Lewis among others). He was able to do a good job and got his master's degree from Technology in Chemical Engineering Practice in 1938. He went from there to Whiting, where he has since been. He is married, and his wife Betty and our little one-and-a-half-yearold granddaughter, Peggy, are visiting us in Washington right now. We naturally think she is about perfect. Our daughter Helen went to Swarthmore College and then to Radcliffe, where she received a doctor's degree in astrophysics in 1943. She has been working at the Yerkes Observatory of the University of Chicago at Williams Bay, Wis., and is thinking now of going into industrial research. The old man is rate engineer for the Potomac Electric Power Company in 'the Nation's Capital,' which company is endeavoring to conduct its business under the 'guidance' of the usual number of regulatory agencies. My wife and I are interested in several causes, on which we spend as much effort as time and strength permit, being particularly concerned about race prejudice and discrimination against both negroes and citizens of Japanese parentage. We hope that the hatreds created by total war, for which all of us are indirectly responsible, will some day be overcome. I cannot contemplate the establishment of peacetime conscription as an American institution, except as the surrendering of the coming generations to ever increasing military control extending into every field of their lives — schools, business, and church. We must not let that come about."

Just as we go to press we receive notice of the death of William W. Ammen, XIII. His wife writes: "William Wetherall Ammen, born October 8, 1883, died on September 25 at the Hanna House, University Hospital Center, Cleveland, Ohio. The only child of Samuel Z. Ammen and Anne Kelso Wetherall Ammen, he was graduated from Johns Hopkins in 1902 and from Technology in 1905. He had been with General Electric law department for the past three years. His residence was 2272 Westminster Road, Cleveland Heights, Ohio. Surviving him are his wife, Sarah-Frances; a daughter, Evadne; and a son, William, on occupational duty in Germany." — Fred W. Goldthwait, Secretary, 274 Franklin Street, Boston 10, Mass. SIDNEY T. STRICKLAND, 71 Newbury Street, Boston 16, Mass.

1907

Little did I imagine when I was preparing the items regarding Stuart Godfrey that appeared in the November Review that in this December issue I should be recording his death. Yet such is the sad fact. By radio announcement on October 20, confirmed in the newspapers, came the news that on the 19th, while returning from Hamilton Field, Calif., after conferences at Fourth Air Force headquarters in San Francisco, Brigadier General Godfrey and four other men were killed when the plane in which they were traveling crashed into a small hill six miles east of Spokane, Wash., where, at Geiger Field, Stuart had been commanding general, as stated in the November notes. Many news items regarding him and many quotations from letters he has written to me have appeared in The Review during the past 20 years, because although he did not graduate with our Class, as he left Technology in 1905 to enter West Point, he has always been a loyal '07 man, often finding time in his exceedingly busy life to write me long letters. He was one of the most brilliant and brainy men in the Army, being number one in rank in the Class of 1909 at West Point, as well as graduated in 1911 from the Army Engineer School, and in 1927 with honor from the Command and General Staff School. He has seen service in practically all parts of the world during two world wars and in important peacetime projects of the Army Engineers. He directed the construction of some of the first B-29 bases in the China-Burma-India theater, beginning in November, 1943. At the memorial service held for him at Geiger Field, he was described as "the father of the aviation engineers." He is survived by his widow, a married daughter, and two sons, to whom on October 21 I wrote a letter of sympathy on behalf of our Class.

Having learned in September that John Francis Greene of our Class had contributed to the Alumni Fund, and realizing that we have never carried his name on our class mailing list, I wrote to him expressing appreciation of his gift, stating that his name had been placed on our list to receive all '07 messages from me, and requesting him to tell me of his doings since 1907. I received a prompt reply — a most satisfying experience for a Class Secretary! John entered Technology in the fall of 1905, after receiving his A.B. degree at Boston College, taking the Civil Engineering Course. From 1907 until 1917 he was bridge engineer for the city of Spokane and the city of Calgary, successively, and then for two years general superintendent for a contracting firm. Then (note this) from 1919 to 1922 he was office manager under Clarence Howe of our Class for the firm C. D. Howe and Company at Winnipeg. Since 1927 he has been senior engineer with Ford, Bacon and Davis, Inc., construction, valuation, and management engineers, of 39 Broadway, New York. Among his assignments in service was that of resident engineer at the Arkansas Ordnance Works, and project manager at the Vigo Ordnance Plant at Terre Haute, at two shipyards for Electric Boat Company at New London, Conn. (one a four-million-dollar addition in 1941, and the other a new yard in 1943), a 105-millimeter shell plant, and the atomic bomb plant at Oak Ridge, Tenn. He writes of having met Jim Garratt and Allan Cullimore, of our Class besides Howe, in his engineering career. John and his wife live at 188 Bellevue Avenue, Montclair, N.J. He has a married daughter. A son, born in 1920, was killed in action in November, 1943, on Liscombe Bay - a fighter pilot.

A brief note from Willis G. Waldo, received on last October 7, states that his consulting work has led him into some interesting developments in the Florida Everglades, about which he promises to write me later. His new address is 408 Lake Court Apartments, West Palm Beach, Fla. — Word has been received of the death on July 25, 1944, of John W. Woodruff, a captain at the Navy Yard, Cavite, Philippine Islands. He was a naval constructor affiliated with our Class, but has never manifested any interest in class or Technology affairs. — Bryant Nichols, Secretary, 23 Leland Road, Whitinsville, Mass. HAROLD S. WONSON, Assistant Secretary, Commonwealth Shoe and Leather Com-

pany, Whitman, Mass.

1909

From Paul: I'm just back from several weeks on the noble coast of Maine. I was with the two Dodge families whom I have known for over 20 years: one is in Friendship and the other on Isle au Haut. There are six young people in the two families, and here is their record: Stanley is just back from North Africa, Sicily, France, and Germany. Nerita is a coxswain in the spars in Ketchikan, Alaska. Charlie Junior is in Oahu in the Hawaiian Islands, a seaman in the Navy. Elaine is the bride of an armed guard on a Liberty ship. Anita is the wife of a young man with Pratt and Whitney in Hartford. The remaining cousin is still in school. But that's a good record for two Maine fisherman families. The men are all doing well fishing. Catches are good and prices high. Charlie Dodge (he is Captain Dodge to everyone in the village of Friendship since he has commanded for many

years a smack that sailed the coast and bought the lobsters from the fishermen) is now fishing on his own. One day while I was stopping with him he brought back for his morning's work 125 pounds of lobsters that he sold for \$37.50, that is, at 30 cents a pound. Lobsters have brought as much as 50 cents a pound this summer. Charlie told me that that day's catch was as good as any he had ever had. There was talk along the shore that the fishermen might not fish regularly in December. The weather might not be good, and they did not like to report too high incomes when they made out their tax returns! That was a new one to me.

I stopped at the Institute both on my way to Maine and again on my way back. I get prouder of the Institute every time I am there. It gets better by the year. Dr. Compton had just returned from across the Pacific, and Bob Kimball'33, who is now on Dr. Compton's staff, gave a glowing report on our President, who still seems to me to be the most distinguished college president in the country. I was lucky enough on my way to Maine to be asked to lunch at the home of Bat Thresher 20. I am so fond of Bat and his wife, Twinkle, that I had a delightful time. But on my way home I could not see Bat at all. He was too busy with applications from service men from everywhere to take time for an old grad like me. One of the applicants, by the way, was my cousin's son, Prescott Coleman, who is recently home from England. Peck served as a navigator on a bomber that was based in England, and I was delighted, the other day, to have word that he had been admitted to Course XVI. The gossip was that the Admissions Office was sending out 1,000 pieces of mail a day!

Also from Paul: Months ago, in the regular routine of the Alumni Office, there came a form stating that Brother Daniel was at San Juan Bautista, Calif. I searched the "Register" but found no clue. I wrote to Brother Daniel, and here are extracts from what I think the most interesting letter that has come my way as Class Secretary. I'm puzzled, too, for Brother Daniel was in my course, V, and he describes me. Yes, I had some hair in 1909, though not so much, but I'm not the one, after all, whom Brother Daniel has in mind. Here is

his letter.

"I wonder why the Institute takes such an interest in me. I was only a special student, not out for a degree, but concerned simply with getting some foundation in analytical procedures. Neither was I a natural chemical student, having taken up the calling merely as a means of offsetting my deafness, a handicap in the workaday world. My name to you in Course V was Fred J. Doherty. [The listing in the 1940 Register is 'Daniel, Brother M.M.'] I recall you as tall, dark-haired, ruddy-faced, and slow of speech. I think we took Woodman's course in food chemistry and Gill's in oil analysis. I taught chemistry and physics at our college at Clarks Summit, Pa., from 1925 till 1934. But the handicap of deafness was getting too much for the control of large classes, although I enjoyed teaching very much. So in 1934 I stepped down from my desk, turned over my work to my former students, and others who knew some chemistry, and prepared myself to enter the school of

library service at Columbia University. This took up the year of 1935-1936, in which I went to school again at the age of 50 and won a degree in librarianship. It was a very happy year of my life as I had a flair for such work and, in the opinion of my teachers, was blessed with a scientific background and a training in literature, or classics. I spent from 1936 to 1940 in organizing the library of our college at Clarks Summit. During that period I began to suffer crippling attacks of rheumatism and in 1940 had to be hospitalized for an intense onset of the ailment. So it was settled that I go to a milder climate, and I was sent out here, leaving my library task at the college unfinished. Here I took up a life of physical activity in the golden sunshine. There are flowers to weed, lawns to trim, and tourists to be conducted through our old mission. It was painful at first, but I am in fine condition today; in fact, I received a splendid medical rating from my brother when I came to Boston a year ago for my eastern furlough. I am not ordained; I am only a lay brother. None but priests are ordained. Bad ears have barred me from much because hearing is so vital in many fields. But in chemistry there is a little corner where one may to others and win the respect of one's superiors." accomplish honest work without irritation

When your Secretary wants to get the low-down on the men of the Scharff family, all he does is to ask Jeanne for news of the husband and son. Jeanne Scharff, whose husband is in Germany and whose son is in the Philippines, is always willing to help with the class notes. Here are the most recent items: "The bit of news I had for you late in the spring can now be told. I couldn't tell you then because it wasn't official. But it is now, and here it is: Molly was presented with the Legion of Merit. But that news is surpassed by his calling me from Switzerland on October 13 to say he'd be back around November first! And now, to turn our attention to the Pacific, I had a grand letter from our 'young fried clam' yesterday. He has more than enough points to come back, and he is hoping he'll be seeing us by the year's end. And to make a fond, adoring mother burst with pride, he wrote me that he had gotten a special commendation from General Hutchison complimenting him on his work! I think Samuel and another boy in his outfit were the only ones to receive this special word." And may we add that Jeanne and her lovely mother, Mrs. Adler, were in New York shortly after, and Jeanne was surer than ever that Molly would be home as he had hoped. I'm just selfish enough, too, to hope that the Scharffs are soon in their own home in Manhattan. For I can think of no one who has more delightful dinner parties than Jeanne.

Our versatile and irrepressible classmate, Senator Tom Desmond, I, bursts into notice again in an editorial in the New York Herald Tribune in late October. Tom is introducing three bills in the New York Legislature to set up state-wide curbs on roadside billboards. That is a good cause, and Tom with all his enthusiasm will see that a convincing argument is made to the legislature in Albany.—Charles Camsell, XII, Deputy Minister of Mines, was recently presented with a portrait of himself

in recognition of his eminence as a traveler, geologist, administrator, and public servant. The presentation was made by the Hon. T. A. Crerar, former Minister of Mines, and was a tribute from his colleagues in the department, and the Canadian Geographical Society, various mining associations, and numerous personal friends. - Your Secretaries have received from Let King, IV, and Mrs. King an announcement of the marriage of their daughter Margaret Hazen to Donald James Stroop, Captain, A.U.S., at the Noroton Presbyterian Church, Noroton, Conn., on September 15. Captain Stroop is in the Cavalry. The Class wishes the couple every happiness. - PAUL M. WISWALL, Secretary, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, Re-view Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass. Assistant Secretaries: Maurice R. Scharff, 3860 Rodman Street, Northwest, Washington 16, D.C.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

1910

Phil Taylor passed away on the morning of October 21 after a long illness at New Ipswich, N.H. We shall all miss Phil with his genial disposition and his enthusiasm for life in general. Phil practiced engineering in Boston up to a few years ago, when he went into the manufacturing business at New Ipswich. It was an opportunity to which he had looked forward, in that he would have a lucrative business and could live in the country. He leaves a widow, and two daughters.

Frank Bell has written me that he is now out of the service, that his terminal leave is up in December, and that he is back on his old job as vice-president of the Uvalde Construction Company in Dallas, Texas. — Walt Spalding was promoted to the rank of full commander in the Navy last July. He served in Boston for three years and in August was transferred to Pearl Harbor, where he is now located. — Herbert S. Cleverdon, Secretary, 120 Tremont Street, Boston 8, Mass.

1911

You just had to be there to sense the real thrill of it — that glorious reception given by Boston, Cambridge, and the Commonwealth of Massachusetts to our own General, George C. Kenney, I, on his home-coming, October 18-20! Almost on the dot of 3:30 that Thursday afternoon, George's B-17 landed at Logan International Airport, East Boston, and George and his charming wife, a native of Gardiner, Maine, and their attractive daughter, Julia, 19, stepped out to be greeted by city, state, and army officials. George's sister, Mrs. L. Gordon Glazier, along with Gordon and two of their daughters, Mrs. Walter N. Downing (this is Phyllis, the class baby) and Miss Leslie Glazier, also 19, were there along with three of his buddies in World War I and yours truly. During those 40 hours that George was here it was my good fortune to see a lot of him, and early in the proceedings he assured me that wherever he was next June he'd "fly to the 35-year

Following a radio program covering the arrival, and an interview with the press, in which George was on the "other side of the fence" from what he used to be when

he and Gordon and I covered Technology news for the Boston papers in 1908 and 1909 he entered a car, flanked by Mayor Kerrigan of Boston and Governor Tobin of Massachusetts, and led a procession of cars which was met by Boston's mounted police at the Boston end of Sumner Tunnel and then proceeded to Parkman bandstand on historic Boston Common, where George told the gathering how glad he was to be back in the Hub and how different these streets were from those he had recently traveled in Tokyo. The first question fired at George by the reporters at the airfield had concerned the atomic bomb, and George declared emphatically: "America must not share the atomic bomb - not with anyone. And don't get the idea there won't be a defense against the atomic bomb almost at once. As the old wrestler said: 'There ain't no holt that can't be broke.'

The crowd on Boston Common was with him from the start of his talk and went wild when he assured his listeners that they need not worry one minute about this generation of kids that won the war. "People call them 'drugstore cowboys'," he said, "but I want all of them I can get in the Air Forces. They're more intelligent than my age group was in World War I, and they use planes more intelligently. George and his wife have one son, William R., a captain, who is a navigator with the Thirteenth Air Force in the southwest Pacific. That evening the City of Boston tendered George a formal banquet, and there, as he had the preceding Sunday evening on radio's "We, the People" program, George came out unequivocally for a Department of National Defense, with co-equal arms for land and sea and air. "Under General MacArthur we've had that sort of organization in the Far East ever since I took over in 1942," he said. "He used to call us his 'Ku Klux Klan' - Krueger, Kinkaid and Kenney - but he was the boss, the one who made the over-all decisions. It worked there—it would work here." After a stirring tribute to "the man who personally shortened the war by many months," Mayor Kerrigan presented a handsome clock on behalf of the City of Boston. At the dinner John Herlihy, II, and Tom Haines, II, were with me at one table, with the Glaziers and the Kenney family also present. George spent the night at the Glaziers' in Brookline, along with his wife and daughter, turning over the state suite at the Copley-Plaza to the four young officers who had accompanied him — his "kids," as he calls them all.

As on Thursday, the weather was again clear and mild on Friday, and at 9:45 A.M. a huge military parade started from the Public Gardens end of Commonwealth Avenue and wound its way around the gardens and the Common, up by the State House, with George again riding between Mayor Kerrigan and Governor Tobin, until the parade had passed City Hall, when it was halted to allow George's car to proceed to the reviewing stand in Post Office Square. Yours truly met him there by appointment and was with him as the parade passed in review. During the parade more than 60 planes flew in formation over the city for several minutes — a most impressive sig

Afterward we repaired to his suite at the Copley-Plaza, and George and I had a

grand chance to talk over old times. Like all of us, he's older, but he's really the same George! He and his wife and Julia and I walked to the Statler, when it was found there was a car mix-up just before noon, when the State "took over," and there a group of George's friends in the Class were present with others at the Governor's luncheon in the spacious Statler ballroom. Governor Tobin paid a particularly fine tribute to George and, on behalf of the Commonwealth, presented him and Mrs. Kenney with a gorgeous silver punch bowl. In a fine talk on this state occasion, George emphasized the need of commercial aviation's developing along with the huge air force he believes we should have. In particular, he urged continuation of the work already begun with an enlargement and improvement of the Boston airport, for its location is ideal, and it really should be the number one airport of this country. Included among the luncheon guests were John and Mary Alter, Joe and Ruth Fuller, Tom and Mildred Haines, John Herlihy and his son, John I.'39, Harold and Mary Lord, Fat Merrill, R. Oberg for Carl Ell, O. W. Stewart, Emmons Whitcomb, and Gordon and Eloise Wilkes. After lunch we had an enjoyable class reception with George and his family in Parlor A.

Gordon Glazier and Iaccompanied George on a trip to Cambridge in the afternoon, with stops made at Technology and Harvard. Mayor Corcoran greeted George at the Massachusetts Avenue entrance of the Institute, and then we proceeded to President Compton's office, where prominent members of the staff joined the President in greeting George. Walter Allen, XIII, was also there. Having previously paid special tribute to his alma mater for its radar work, George was taken by President Compton on a personal tour of the Radiation Laboratory and other labs where important Army and Navy work still continues. Another cordial reception awaited him at Harvard, where he was taken on a tour of their aeronautical laboratories. This ended his full-up program, and after visiting the Glaziers' middle daughter, who was recovering from an appendectomy at the Peter Bent Brigham Hospital, George returned to the Glazier home and took off at 8.00 A.M. Saturday, October 20, for Dayton, Ohio, where another afternoon and evening of welcome awaited him. There, too, he was eager to see his grandson, George C. Kenney, 2d, 20 months. One of his 'kids' - Sergeant Clifford F. Cotter, who had fought at New Guinea under George's command — expressed it pretty aptly, I thought, when he said: "He's the general you don't read about; he's the general you dream about.

About the same time, Selly Seligman, III, sent me a clipping from the New York World-Telegram quoting General Kenney from Honolulu: The power of bombs put Japan out of the war and can keep her from getting into another." George termed the atom bomb just another bomb and said, "There will be others that will make it in comparison as small as the fragmentation bomb." He repeated this thesis during his Boston trip, also urging retention of a strong and well-balanced air arm to insure peace in the Pacific.

By curious coincidence, Carl Richmond, I, a colonel, was scheduled to return to

Boston that same October 20, for although technically in the Army until January 22, he expects to join Jack Dalton 15 and the Boston Manufacturers Mutual Fire Insurance Company on November 1. His new address will be 4 Grove Street, Winchester, Mass. He said he had recently seen Pete Gaillard, VI, in Washington and found that he has been out of the Army for several months. He also saw G. Arthur Brown, X, still a civilian employee of the Army. Carl sent me a copy of the citation accompanying the awarding of the Distinguished Service Medal to Sidney P. Spalding, III, a major general, who started with us but transferred to West Point, whence he was graduated in 1912. He served over-seas in World War I. The medal was presented to him on October 8 by the Under Secretary of War, Robert P. Patterson, "in recognition of his outstanding services as head of the Supply Division of the United States Military Mission to Russia." He served in this capacity from October, 1943, to June, 1945, acting at the same time as personal representative of the Federal Emergency Administration and the War Shipping Administration, in which position he conducted all Lend-Lease and shipping negotiations between the United States and the Soviet Union, dealing with the highest Soviet trade officials. The citation concludes: "By discharging his vital responsibilities in an outstanding manner, General Spalding not only contributed substantially to the success of the Lend-Lease program but also inspired such confidence in the Soviet authorities that Russian-American collaboration in the war effort was materially strengthened."

The Alumni Office reported the death of Alanson L. Palmer, a postgraduate student from the College of Wooster at Wooster, Ohio, the alumni secretary of which has supplied details. Palmer died in University Hospital, Columbus, Ohio, on January 30, after several months of illness from a heart ailment. After graduation from Wooster in 1909, he came with us for two years' postgraduate work in chemistry and sanitary engineering and had served rubber concerns successively in Akron, Cincinnati, and Columbus. He is survived by a wife and one daughter.

From Alumni Secretary Charlie Locke'96 comes this statement: "James O. Greenan, III, and his partner (Greenan-Kerr, 206 North Virginia Street, Reno, Nev.) closed down their copper property in July, having produced 422 carloads of copper ore and a ton of metallic tin during the war-stimulated operations. Labor shortages, increasing costs, and low ceiling prices helped

bring about the shutdown."

O. W. Stewart, I, has been named a committee of one to line up the best place for our 35-year reunion, now possible next June, with the lifting of restrictions by the Office of Defense Transportation on October 1, and details will soon be forthcoming on this important event. Meanwhile, all of you are urged to make your plans to attend. Our Class still continues its fine showing in this, the sixth, Alumni Fund. A number of classmates, however, are still procrastinating about this 1945-1946 subscription and NOW is the appointed time, you know. These notes should appear in early December, but it won't be too early for you all to realize that Dennie and Jack

wish you all a very merry Christmas and a happy and prosperous New Year. Selah! -ORVILLE B. DENISON, Secretary, Chamber of Commerce, Gardner, Mass. John A. Her-LIHY, Assistant Secretary, 588 Riverside, Medford 55, Mass.

1913

We had 11 at the Alumni Dinner at the Statler in June: Braude, Cameron, Isenberg with Mrs. Isenberg, Glancy, Bill Mahoney, Murdock, Nelson, Peck, Ready, and Sage. Al Nelson, II, showed us a letter of condolence from President Compton. Al's son, Paul, a 1944 graduate of Technology, was killed in action on January 5, and President Compton praised his record at the Institute. Ed Cameron, I, at that time was working on an unusual project for the armed forces. For some years Ed's hobby has been writing, and he undertook the job of preparing illustrated textbooks, on a wide variety of technical subjects. He organized a staff of 50 engineers, draftsmen, artists, stenographers, and clerks, to do the work

in less than five months.

Albert M. Jones, I, a major general, returned to Boston in September. The following is from the Sunday Post of September 16: "Still gaunt after 40 months of abuse in Jap prison camps following the terrible death march from Bataan in April, 1942, until the Nip surrender last month, Gen. Albert M. Jones, formerly of Quincy, visiting relatives here, last night scorned the 'Forget Pearl Harbor' plea of Jap Premier Higashi-Kuni and advocated use of force on Japan as 'the only language they understand.' 'I wouldn't pay any more attention to what the Nips say than I would to a jackrabbit,' the general snorted when told of the plea. 'It is what we do that counts, and we must be tough with them,' he continued. 'I don't mean that we should descend by one inch to any inhuman treatment of the Japs. Nothing is to be gained by using their barbaric tactics. The only thing they recognize is force, and force we must use if their race is to be a member of the family of nations. We must be tough with them until we can bring them from the Middle Ages to a place where they are fit to associate with civilized nations.

"General Jones, who surrendered with his chief, Lt. Gen. Jonathan Wainwright, during that dark April of 1942 at Bataan, had accompanied his chief to several prison camps before they were separated, and they again had a reunion at Mukden prison camp last month when Gen. Wainwright was flown there. Still showing signs of the long strain with hard work, beatings, and little food and rest, the general, who was senior instructor of the Massachusetts National Guard from 1937 to 1939, his last assignment before being sent to the Philippines, is here to visit his sister-in-law, Mrs. Fred E. Jones of 1150 Hancock St., Quincy, widow of the late D. Jones, former medical examiner and a lieutenant colonel in the 26th Div. in World War I. The general, who now lives in San Francisco, formerly lived at 33 Waterston Ave., Wollaston. His wife, a former Quincy City Hospital nurse, was the former Barbara Henry of Quincy. She is now in San Francisco. On a 90-day furlough to recuperate, the general, who lost 41 pounds during his long imprisonment, is flying around the country in an army plane assigned to him. He is accompanied by four sons, Maj. Jack R. Jones, who was commander of the 501st (Apache) Squadron in the Pacific, which gained great fame during the war; Capt. Robert S. Jones who served with the 20th Air Force at Tinian; Officer Candidate Bud L. Jones, and Tom Jones, recently discharged from the army air force." Al was with us for the 25th reunion, in fine health and spirits, and we hope that he will soon

regain both.

Edward H. Smith, XIV, a rear admiral in the Coast Guard, was mentioned in the following item in the New York Times of August 25: "Rear Admiral Edward H. Smith, known throughout the Coast Guard as 'Iceberg' Smith, assumed this week his new duties as District Coast Guard Officer and Captain of the Port of New York. Admiral Smith, outstanding authority on Arctic waters, comes directly from his post as commander of a North Atlantic and Arctic Task Force. A graduate of . . . Technology, he holds a Ph.D. from Harvard University where he received a fellowship for his studies in oceanography. A descendant of a long line of mariners, he was born in Vineyard Haven, Mass., in 1889, entered the Coast Guard in 1910 and was commissioned three years later. Author of several definitive works on Arctic waters, Admiral Smith was placed in charge of the strategic Greenland Patrol at the outset of World War II, and during 1942 and 1943 planned, built, supervised and administered the vital naval bases in Arctic waters."

The magazine Storage Battery Power, of June, 1945, contained the article below on Charles Edison, IX. It is interesting for his economic thinking: "Charles Edison, former Governor of New Jersey, former Secretary of the Navy, and President of Thomas A. Edison, Incorporated, was awarded the honorary degree of doctor of laws during the commencement exercises of Lafayette College, Easton, Pa., on June 16. In responding to the citation, he called attention to the influence of scientific education upon the progress of nations, and referred to Russia as one that is making rapid strides. Excerpts from his remarks follow: 'I saw in the Magazine Time a few weeks ago that Soviet Russia is spending \$2,400,000,000 a year on scientific education alone. That is more than we in the United States spend on all public education. I have no idea how much we spend on scientific education, but I am sure it is not one-tenth what Russia is spending. All colleges have about them an aspect of eternity, and in such an atmosphere we may well reflect upon what will be the results if, over a few generations, the Russians push along their scientific education at such a rate, and we carry on about as we are doing. We may assume that it will take them a few years to come abreast of us in some lines of scientific education, though from such accounts as we get, they are already ahead of us in a few. But, in a generation, or even less, they will equal us in all lines and probably exceed us in many. In two or three generations they will be ahead of us in everything scientific. All of us should be aware of this friendly rivalry. I think it is the lesson of modern history that those nations that have pushed along their scientific education have become great powers, while those that have not, have fallen behind. Since the industrial revolu-

tion, a nation's standard of living has increasingly become dependent upon its scientific progress. There is no reason to suppose that what has been true in the last hundred years will be untrue in the next. This is the great destiny that Wilson spoke of that knowledge has brought into the world. The Russians have, throughout this war, maintained their technical schools and colleges. Any young Soviet citizen who showed scientific promise was excused from military duty, while we reduced our colleges and student bodies to skeletons. The result will be that the end of the war will find Russia with a body of young, trained scientific personnel, while we have a four or five year gap in ours. If, as a result of their advancement of their scientific education, the Russians raise their standard of living until it equals or surpasses ours, you may be sure that some Americans will give communism the credit, not science. Here, then, politics and science come together at the point of public education. Does the politics of a democracy see as far ahead as the politics of a nation where there is a dictatorship of the proletariat? I wonder.'

C. Lalor Burdick, III, assistant to the president of E. I. du Pont de Nemours and Company, has been made chairman of the board of Compañía Mexicana de Explosivos, which operates a commercial dynamite plant in Mexico. He was also made chairman of the board of the Du Pont general sales organization in Mexico, with headquarters at Mexico City. Dr. Burdick has been with the Chile Copper Company and at one time was vice-president of the Anglo-Chilean Consolidated Nitrate Company.

Larry Hart, XI, had his picture in the Chicago Tribune of June 10. In an accompanying article, Larry, who spoke at a dinner meeting of the Council in the Merchants and Manufacturers Club, was quoted: "The first year after Japan is smashed we will be able to build 350,000 to 400,000 residental units,' he said. 'During the second year we'll erect from 650,000 to 750,000 if the lumber industry can come back quick enough. Over a five year period—from 1948 to 1952 inclusive—we should average more than one million units annually.' The post-war house may cost 30 per cent more, but the home builder will get a better house, altho it will be about the same size, Hart said."

Lloyd A. Hechinger, III, was married in August at Wollaston, to Kathleen Mary Bowen. A. Lawrence Kocher, IV, professor at William and Mary, has moved from Black Mountain, N.C., to Coke Garrett House, Williamsburg, Va. — Frederick D. Murdock, Secretary, Murdock Webbing Company, Box 788, Pawtucket, R.I.

1914

The appointment of General Omar Bradley as national veterans administrator has brought about a process of decentralization of veterans' affairs. This has brought Bert Hiller back to Boston. Hiller has been appointed manager of the New England branch of the Veterans Administration and will have an organization of his own paralleling that of the administration's central office in Washington. In announcing the appointment, the Boston Herald had the following to say regarding Hiller: "A former Boston resident, Hiller served in the Army in the First World War, then en-

tered the U. S. Public Health Service as a medical statistician. He was immediately appointed to the Bureau of War Risk Insurance to develop medical statistics, and since then has been in the statistical and administrative control field of the Veterans Bureau and Veterans Administration. He has been executive assistant to the administrator of veterans' affairs since 1930."

George Whitwell claims a unique record in the grandfather contest. George writes that during September he became "two grandfathers quite rapidly." Two of his daughters presented him with grandchildren during the same week — one, a grandson, and the other, a granddaughter. This is George's third occasion, and he writes that "everybody concerned is doing well, including the grandfather." George's son, who is an ensign in the Navy, after being graduated in mechanical engineering from Cornell, is still in the southwest Pacific but hopes to be discharged in the not-toodistant future, when he plans to enter the University of Pennsylvania law school.

From Cape Cod comes word from Donald Dixon that his daughter, Dorothy Ann, was married on October 6 to Thomas Arthur Young, a lieutenant in the Army Air Forces. Dixon himself has been associated with Camp Edwards, which is located in the heart of Cape Cod. — H. B. RICHMOND, Secretary, General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Mass. CHARLES P. FISKE, Assistant Secretary, 1775 Broadway, New York 19,

N.Y.

1915

You've done it again! You've put us over the top. Score in the Alumni Fund is as follows: 149 of you (85 per cent) have given \$3,209 (109 per cent). We had not reached these totals last year until February 1. With about a dozen men still left to be heard from, we should hit an even higher figure. Many thanks, many blessings!

A choice bit for you this month is this inimitably styled letter from none other than St. Elmo Piza, "recently returned from the wars": "If I am late forgive me and lay it to the difficult period known as readjustment, the much more difficult problem of finding a place to live, and lastly, to my perennial procrastination. . . . There is so much to remember and so little to tell that I am not going to attempt even a résumé. Two and a half years in England were far less adventurous than they might have been during the same period here. I was often cold and frequently bored with inactivity and seeming inefficiency. But nowhere have I ever found greater kindness and consideration nor truer friends. I came away with reluctance, conscious of leaving something precious, but also of having gained something which can never be replaced. I think I am just as American as I ever was, but with a considerably broadened base from which to exercise my American prerogative of constructive criticism. . . . I find myself a little bored, for example, by people who tell me of the rigors of wartime rationing here. . . . I also collected a small dossier of stories and anecdotes which will go on the agenda for our next meeting. They may need a glossary, which I am preparing to append to the posthumous volume. . . . Did you read, over here, of the first buzz bomb that

fell in Hyde Park? Blew the "ats' off all the G.I.s (or so they say). I personally was not in uniform, so I never wore one." Despite the writer's unbecoming modesty, we may be able to prevail on him to give us an off-the-record talk about some of his ex-

periences.

In a recent business letter to Ralph Hart, Ken King, writing from Delaware, says: "I went to the Tech Alumni Dinner in Philadelphia last night. They had a considerable turnout, and it was a very pleasant affair . . . I will telephone you the next time I am in New York." — Accompanying one of the really high-bracket checks, Ben Lassen wrote from a new address, Raven Electric Company, Inc., 20 West 23rd Street, New York City. I hope to see Ben on his next trip to Boston; meantime, our thanks to him for his splendid contribution. — In New Haven, I had a very fine visit with Vince Maconi. His son, Richard, a recent Technology graduate, is a naval officer in the Pacific; his other son, Norman, is in training, and his daughter Lois is getting ready for college. — Letters like the following from Gene Place lighten my job of collecting for the Alumni Fund: "You go about this chore of yours in such a way that it is always a pleasure to hear from you. . . . Attached is my check, with the hope that you have by this time reached your quota. . . . I look forward to seeing you again in New York. Please call me when you get the time.

After I missed seeing Sol Schneider on his Boston trip from Upper Darby, Pa., he wrote as follows: "I'm still with the Navy Department at Philadelphia and expect to be with the Navy for some years, and then to live the life of a loafer going and coming when it suits me. . . . I see our classmates regularly at the Technology Club of Philadelphia dinners: Andy, Henry Daley, Ed Whiting, Grev Haslam, and Larry Bailey. I occasionally see Fred Stetson and Charlie Noyes. I had hoped we should have an all-Philadelphia class gettogether this summer, but Andy could not get things arranged, and you were not available. . . . Now we hope that in this coming fall we shall be seeing you in Philadelphia very soon, and perhaps some of the boys can make up a luncheon date. I have a special gift for Ralph Hart, so prevail on him to come along with you. . . My daughter Janet, a WAVE, expects to be mustered out pretty soon. She is now Mrs. Alan Gray, having married a California boy, and when he is discharged from the Navy, she will be mustered out with him. They will then go West, where his father is in the structural steel erecting business. . . . Give my regards to Abe Hamburg, Larry Landers, and Ralph Hart.

Registered at the Hotel Hershey, Hershey, Pa., on September 29 was our own Weare Howlett. The picture of the place reminds me of the Oyster Harbors Club at Cotuit, which reminds me that inquiry should be made as to Weare's conduct at Hershey. — I sent copies of the pictures taken in Ralph Hart's apartment at the time of our New York class dinner to all the boys present. In answer, Tom Huff writes: "I certainly am in full accord with the idea of having another get-together this fall. The set of pictures is fine." Charlie Williams says: "The snapshots reminded me of a delightful evening, as is

to be expected when 1915 gets together. . . . Sorry the 30th reunion is off for the present. . . . Walter Binger'16 has resigned as commissioner of Borough Works in New York City. He will go into private construction in a big way, and on June 1, I took over his job. It will relieve you to know that 1915 isn't working for 1916 any more; but he's a swell guy, and I miss our old association." From Alan Standish Dana: 'You cannot imagine how delighted I was to get those copies of pictures showing part of our group at the grand class dinner last winter. . . . My wife, at frequent intervals, reading your section of The Review, suggests rather pointedly that I write you something about my existence. So I may get around to it some day, although I wonder who will be interested in it if I do." And then Alan says it again in his letter to Ralph Hart: "I am so pleased to have three pictures from Azel that I wanted to write you personally. You see, I take a great many pictures myself, but no one ever takes a picture of me. It therefore is a treat to see myself, although I look my years! In fact, I have added another year this very day.

. . . We all had a wonderful time, both at the Panda Club and particularly at your home. As an entertainer you are certainly the tops, and I am very much afraid our 1915 dinners in New York would fall quite flat if it were not for you. Thanks again for

everything.'

Herb Anderson writes: "I think it would be just fine for you to be with us in Philadelphia as soon as you can plan the time, and I am sure that we can round up a good representation from our Class I am standing by waiting to hear that you are on your way." A note from Jerry Coldwell: The prints of our New York party at Ralph Hart's were waiting for me when I returned from a trip yesterday. Seriously and sincerely, thank you. I had looked the camera over that night and suspected it was a professional piece of equipment. The detail is good, and the depth of focus is such that there is no blur." In addition to the note, Jerry sent me the announcement that his firm, Ford, Bacon and Davis, Inc., engineers, had been awarded the Army-Navy Production Award at their plant, the Clinton Engineer Works project at Oak Ridge, Tenn. I believe that this is the same place Jerry referred to last month, where the development work on the atomic bomb took place.

The sad passing of another classmate, and a particularly good friend, brings sorrow to us all. Alfred F. Nye died on May 14 at his home, 84 Green Street, Fairhaven, Mass. Alfie will be remembered as an indomitable cross-country track man at the Institute and as captain of the track team in the 1912 season. He was active in the insurance business for many years, in 1927 serving as president of the New Bedford Life Underwriters Association. He is survived by his father, Horace K. Nye, who notified me of his son's death, and by his stepmother. His wife, the former Irene Bennett Douglass, died in 1919. To his father we have sent the sympathetic feelings of the Class. - I am happy to report that Frank Scully has completely recovered and is back at his desk at the United-Carr Fastener Corporation in Cambridge.

How do you like these long columns of class notes? You do? Well, then, keep on

sending in letters about yourselves and your families — tell us what you are doing, and ask questions! You can, in that way, "help Azel." Next month you will have the full report of the Boston class dinner in preparation for next summer's reunion. This will be something to think about during the cold days of the winter, and should pull you along in your thoughts to a grand gettogether for 1915. — AZEL W. MACK, Secretary, 40 St. Paul Street, Brookline 46, Mass

1916

First of all, our 30th reunion is scheduled tentatively for June 7, 8, and 9, 1946. Also tentatively, Chuck Loomis has spoken for reservations at the Oyster Harbors Club on Cape Cod, where we had our 25th reunion. Doubtless soon after January 1, telephone wires will begin buzzing with all kinds of pressure for the same reunion committee that functioned at our 25th to get busy and make plans for our 30th. However, this is advance notice to all readers of these notes to reserve the dates men-

tioned above.

C. M. Richardson last August was appointed manager of research engineering at the Mathieson Alkali Works, located at Niagara Falls, N.Y. - Alexander Brest, a lieutenant commander, has recently been given an assignment to develop plans for an aviation engineer school at Escola Tecnica, Brazil. Upon completion of this assignment, he plans to return to his home in Jacksonville, Fla., where he will again enter the contracting business. - Dave Patten is back in Washington, as of August, and writes, "Save a place for me next June at Oyster Harbors." Not only will we save a place but certainly we expect to have Dave on the reunion committee as a very active member. - Jasper Carr, the wellknown biscuit manufacturer of Wilkes-Barre, Pa., plans to establish a new bakery at St. Louis, Mo. Last May he was part of a 1916 reunion in St. Louis at the Missouri Athletic Club, along with Howard Claussen, Chuck Loomis, and Vertrees Young of Bogalusa, La. — Frank B. Hastie, a lieutenant colonel, sends along his change of address in August from Arizona to the Vivian, 1723 G Street, Northwest, Washington, D.C.

Joseph W. Barker has returned from Washington to Columbia University, where he is dean of the school of engineering. He received the Distinguished Civilian Service award for his work in Washington in connection with the Navy training program.

— The latest on Bob Wilson is that he was recently elected a member of the board of directors of the Chase National Bank. Bill Drummey was appointed last June by the mayor of Boston to the position of chairman of the Boston Transit Commission. - Walt Binger, formerly commissioner of Borough Works in Manhattan, New York, resigned as of last June to become vice-president of the City Investing Company at 30 Broad Street, and is reported to have entire charge of the company's postwar building program, consisting of at least one office building, four apartment houses, and several theaters. Cy Guething, whose new address is 540 Rivenoak Avenue, Birmingham, Mich., has started in business for himself as a manufacturers' agent in the machine tool

business. Cy plans to turn his business over to his son, Ted'41, who should be out of the Navy next June, in order to attend our

reunion in 1946.

As these notes are written, the status of the Alumni Fund indicates a greater interest on the part of Alumni. Our Class, however, had only 65 per cent of its quota of \$2,800. Let this be a reminder to those who have not sent in their check that it should be drawn payable to the Institute and mailed to Cambridge. — James A. Burbank, Secretary, The Travelers Insurance Company, Hartford, Conn. Steven R. Berke, Associate Secretary, Berke-Moore Company, Inc., 11 Boylston Street, Brookline 46, Mass.

1917

It has been previously noted in these columns that Claude Roberts was doing important work for Army Ordnance. A most interesting letter received from Claude. who is now a full colonel, tells of the secret projects on which he has been working. Of these the most important was the radio proximity fuse, which is classed in importance with the atomic bomb and radar. In the early part of 1943, a mission of three high officers, one of whom was Claude, was sent to the Pacific theater to make a study of amphibious operations with a view to correcting the many shortcomings which were apparent to the high command at that time in this type of military operation. As a result of this study and survey, important recommendations were made for subsequent invasions, which paid high dividends, not only in beating the Japs but also in saving American lives. Claude is now back in the Pentagon Building, working on long-range research programs for the Army, and expects it will be about another year before he gets back to civilian life.

In the early part of October, Penn Brooks was in Boston for a Corporation meeting, and a few of the crowd got together for lunch to hear of his experiences with the War Production Board in China. This firsthand account of industrial conditions in China, told in Penn's usual entertaining style, was most interesting and informative. Needless to say, he acquired more than a speaking acquaintanceship with the generalissimo and other high-ranking officials as well as with several charming Chinese ladies of high rank and culture. Those attending the luncheon were Al Lunn, Ed Doherty, Ted Bernard, Art Dickson, Ken Bell, Horace Ford, Ray Stevens, Henry Strout, Ham Wood, Stan Lane, Rudy Beaver, and Harry Sandell. A special guest was Carl Keller, who is on the Visiting Committee for Course XV. We had heard a well-supported rumor that this luncheon was of sufficient interest and importance to attract one H. P. Eddy out of his retirement (some of you may remember that Bill is still a member of the Class in good standing and in the dim past used to turn out for reunions, lunches, and so forth), but we were again disappointed and, in the absence of any more specific information, must deduce that somebody's sewer got clogged, a situation which of course would have to take precedence over a frivolous affair like a luncheon.

By the time this issue of The Review goes to press, Win McNeill will have staged a successful dinner in New York. Among those who had indicated that they would be present, and presumably were there, were J. W. Anderson, T. G. Best, A. R. Brooks, C. M. Gilt, R. O. Loengard, F. Maguire, A. R. Morton, W. D. Neuberg, V. Panettiere, E. B. Payne, K. C. Richmond, L. C. Roberts, R. G. Shand, A. P. Sullivan, H. E. Wellcome, and A. H. Wenzell.

In answer to our request for news items, a reply was received from Potts Mehaffey, and although he didn't have much of any news to give us, he at least deserves to have his name in print for making a try. He says that the only one of the crowd whom he has seen recently is McGrady, who gets to Washington occasionally. Mac was in Boston a short time ago to consult Dr. Reginald Smithwick, who has established quite a reputation in treating the rather annoying condition classically known as hypertension (in plain English blood pressure). He telephoned Lobby to inquire whether he knew anything about Smithwick, and Lobby assured him that he could have complete confidence in Smithwick inasmuch as he had been graduated from the Institute in 1921 with a degree in mining engineering. — Dick Loengard also passed through Boston recently on his way to Exeter, where his son is enrolled this year.

We stand ready to nominate Neal Tourtellotte as being the most versatile man in the Class. You will perhaps recall that some time ago we gave an account of his skill in flower arrangements, which won him a prize. Then, a year or two ago, he was raising prize apples, and in spite of the fact that we gave this venture a large amount of free publicity in the class notes, neither the Secretary nor any of his assistants ever received a sample of these apples, which were described as super-duper in every respect. Neal has now acquired a brand-new hobby and at the same time has solved a problem which is plaguing most of us: namely, the bacon shortage, for be lieve it or not, he is now raising what is commonly known as pigs, but he calls them swine. A very seductive invitation on a letterhead with the name Janalu Farm superimposed on a silhouette of a husky sow, informs us that the annual Hampshire Swine Judging Contest was to be held at the above-named farm on October 20. In addition to the judging, guides were to be available to explain such gadgets as electric brooders, pig creeps, nursery pens, breeding crates, and so on. The invitation ends with a most cordial note, suggesting that you bring your friends and associates, young or old, male or female, who would be interested in an event of this type. Neal added a personal note that he was having a lot of fun and that one of his young sows that he sent East to a national Hampshire show in Kansas, which we always thought was West, took third place and that he beat

all of the boys from the "Corn Belt."

A letter from C. L. Coburn apologizes for not letting us know of his activities sooner. He has been a designing engineer with the Navy during the war. He is now back in civilian life and is in consulting engineering work under the firm name of Coburn and Montague, at San José, Calif.

— It is probable that a few replies will be received in response to Ted Bernard's re-

quest for news for this issue of The Review too late to be included in these notes. We wish to assure any kind souls who did reply, even though too late to have their names appear in print now, that such items will be in the next issue. — RAYMOND STEVENS, Secretary, 30 Memorial Drive, Cambridge 42, Mass. Phillip E. Hulburd, Assistant Secretary, Phillips Exeter Academy, Exeter, N. H.

1918

As these are the first notes since spring, I must go back to the Alumni Dinner in June. Present that night were the old standbys — Ray Miller, Tom Kelly, Bill Wills, C. E. Richards (who had come on from Ohio to be present at the graduation of his son), and myself. I feel sure that the Office of Defense Transportation regulations had something to do with the small attendance.

Our old friend Pete Strang has taken unto himself a bride. About the middle of July he married Muriel Howland of Auburndale. Al Mumford's daughter, Anita Rose, was married to Lawrence Wanthouse, Jr., an ensign in the Naval Reserve at the Little Church Around the Corner in New York on

June 26.

News has come through from the infor-mation department of Western Electric Company that Timothy E. Shea, formerly chief of the research products division, has returned to the Western Electric, after four years of service as director of research for the Columbia University division of war research, which operates under the National Defense Research Committee. Tim has been appointed superintendent in charge of manufacturing engineering at the company's vacuum tube shop in New York City. During the past year and a half, he has been working chiefly with the submarine forces, a job that has required extensive travel to many points throughout the world. Most important of the activities which he has directed has been the new London N.D.R.C. laboratory, which was specially organized for submarine and antisubmarine work in close co-operation with the Navy. Most of the projects Tim has supervised are still guarded by secrecy, but they have had a decided influence in the successful conduct of the war.

From the General Headquarters public relations office in San Francisco comes the following news: Herbert B. Wheeler, a colonel, who is assistant to the chief of staff at General MacArthur's headquarters, has received the Legion of Merit for "exceptionally meritorious conduct" in the performance of his duties. From a newspaper clipping comes the following: "Colonel Wheeler received the Legion of Merit for his superior formulation of instructions for land, sea, air forces under MacArthur's command all the way from New Guinea through the Philippines." His citation said that he had supervised the movement and staging of Allied troops and promoted co-operation and co-ordination among the Allied forces.

Among our classmates who are out of the service and at home again is Palmer Giles, who spent most of the war period at the American Embassy in Mexico City. He is now back at his home in Texas. And I am glad to say that word is coming through from our Chinese classmates again. From the club list from Chungking, China, comes

the address of Kwei Lun Hsueh, who is now with the China Industrial Company

in the mining department.

Will my classmates please help me collect news and keep the notes coming in The Review? I do my best but I do need help.— GRETCHEN A. PALMER, Secretary, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

Benjamin H. Bristol, whose record in the 25-year book dated back to 1922, when he was assistant superintendent at Foxboro, can now be brought up to date. Ben is now president of the Foxboro Company at Foxboro, Mass. He has three children — the youngest William A., one and a half years old. Ben has limited time for golf and fishing. For the benefit of those who are not familiar with Foxboro, your Secretary refers anyone having instrument problems, such as measurement of temperatures, pressures, and flow, to Ben. - Arthur H. Blake, who is now at 28 Wollaston Avenue, Wollaston, Mass., has returned from a tour of duty in Europe and been released from active duty in the Army, to take effect on November 21. He is now vacationing with his parents and will soon be back to resume his civilian career.

L. van Deventer Chandler, 149 Fairmount Avenue, Hackensack, N.J., has resigned, after serving for 20 years as a health officer at East Hackensack, to become chief probation officer of Bergen County, N.J. He has recently been appointed a member of the New Jersey state board of health. Van has a younger son, Steve, who is entered at Andover this fall. - Dr. Clarence I. Gamble of 255 Adams Street, Milton, Mass., has requested a copy of our 25-year book to be used for analysis of the number of children per graduate. The results of his studies will be published when he has

completed them.

The following changes of address have been received: Lieutenant Colonel Henry S. Derby's address is now Delta Base Section, Theatre Service Forces E. T., A.P.O. No. 772, in care of Postmaster, New York City. Commander Roger T. Hall is now at 320 Aspen Street, Northwest, Washington, D.C. Kuang-Piao Hu's new address is West China Development Corporation, 28 Niu Ko To, Chungking, China. Ping Sze King's address is China Industrial Company, Shiang Kuo Shih, Chungking, China. Dean Hsi Mou Li's address is Chiao Tung University, Kiu Lung Pu, Chungking, China. Colonel Robert R. Litehiser's address is 2356 Oxford Road, Columbus 8, Ohio. Major Harold F. Marshall has moved from Osborn, Ohio, to 103 Morgan Avenue, Palmyra, N.J. Frederick A. Parker is now with Standard Vacuum Oil Company, P. O. Box 355, Bombay, India. — EUGENE R. SMOLEY, Secretary, The Lummus Company, 420 Lexington Avenue, New York 17, N.Y.

1920

You should have received a class letter three weeks or so ago. If you didn't, will you please let me know your correct address, so I can be sure you get future let-ters? This letter contained some news which I shall not repeat in these notes. In addition to the loss of our friend and classmate Monroe Shakespeare on August 30, I have received word of the death on May

14 of Alfred A. Ellsworth of Braintree, Mass. I have no details.

Don Kimball is president of the Technology Club of Rochester and is living at 1988 Clover Street, Rochester, N.Y. Arthur Morley is now in Oak Ridge, Tenn., address 306 Delaware Avenue. Bruce Steele has left Herkimer, N.Y., and is now in Bronxville, address 21 Sussex Avenue. Everett Fuller is in Woodbury, N.J. Dolly Gray is now in Norwalk, Conn., having moved there from West Hartford. Al Peterson has left Virginia and is in Chicago, address 550 Surf Street. Whitney Swift is at the Phillips Exeter Academy. Professor I. N. Zavarine is now in Newark, N.J., with the Wilbur B. Driver Company. Bill Schimmelpfennig has left Texas and is now in San Juan, Puerto Rico. Dan Hennessey, a lieutenant in the Navy, is in Ojai, Calif., or was early last summer.

Two of our old Chinese classmates have been located. Ming Hsing Pai is with the Chien Chuan Coal Mining Company at Chungking, and Cheng-Hsun Yang is with the Ministry of Communication at Chungking. I had a nice letter this summer from Elliott Perkins of 35 Addison Street, Arlington, Mass. Elliott has two small daughters and has been working at the Radiation Laboratory at the Institute, on leave of absence from the New England Telephone and Telegraph Company. I was also happy to hear from Mal Lees, who wrote me after the New York get-together last spring and said that the boys did a swell job.

Lyman P. Whitten, a brigadier general, who commanded the Air Service Command in Italy was awarded the Order of Saint Maurizio Lazzari, one of Italy's highest military decorations, and was also awarded the Bronze Star medal for his outstanding efforts on behalf of the Allies' victory in Europe. I was very glad to hear some months ago from Larry Winant, who is living in Millbrook, N.Y. Larry has had a lot of trouble with ill health and had not been heard from for a long time for that reason. It is good to know that he is still interested in the Class, and I am sure all of us wish him the very best of health and good fortune. Ed Bragg is in Greenwich, Conn., address 2 Martin Dale. George des Marais is an eminent patent lawyer with the firm of Cooper, Kerr and Dunham, Woolworth Building, New York. He recently served as vice-president of the New York Patent Law Association. Ed Burdell is still hitting on all six as the director of the Cooper Union, which he has conducted for seven years. Ed says they have not only a school of engineering but an art school and museum; he therefore had to acquire knowledge beyond the technical field.

If you're a radio hound, you may have listened to that eminent authority on fire prevention, Percy Bugbee, who was on the "We, the People" program and several others recently. Membership in Perk's National Fire Protection Association now runs up into five figures. Keep in touch with me. Remember this is our 25th year, and I want all the news I can get. - HAROLD BUGBEE, Secretary, 7 Dartmouth Street, Winchester, Mass.

1921

Dan Harvey, chairman of our 25th reunion, is rapidly shaping the final plans for the party next year, and announcements in

The Review notes will be supplemented by mail. Dan, Saint, and your scribe got together while these notes were being prepared, to settle matters which had been in doubt because of war conditions. Fortunately, we now have the "go ahead" signal for everything and, although there is much more to be done, you can all be assured of a reunion of far greater significance and eniovment than we have ever had - provided, of course, that you will support Dan by planning now to be there and by talking it up with enthusiasm in your local

Walter E. Church, IV, of the architectural firm of Whitehouse and Church, Railway Exchange Building, Portland, Ore., was the object of our telephonic quest from the Portland airport at the conclusion of a short stay in that city earlier this year. Having failed to reach him, we are glad that the notes we ran last June prompted him to write a newsy letter to Ray, which is duly appreciated, the more because it has the only concentrated Course IV news we have received in a long time. Walt says, in part: "While I was a lieutenant colonel in the Corps of Engineers, my headquarters. were at Salt Lake City, where Walter C. Sadler, I, a lieutenant colonel, was also on the staff of the Ninth Service Command Engineers. He was formerly on the faculty of the University of Michigan. Jack J. Winn, Jr., X, is another lieutenant colonel with the Corps of Engineers whom I saw frequently. Jack was commercial manager of the Portland Gas and Coke Company here before entering the service. He spent some time in England and the last I heard was in Washington, D.C. I have now retired to inactive status and am back with my old firm. We are busy with the new State Office Building, a part of the State Capitol group in Salem, Ore. We designed the State Library there and were associate architects of the State Capitol.

"Irving G. Smith, IV, is another of the gang of architects here. Jimmy is asso-ciated with the office of P. Belluschi and Associates. Samuel E. Lunden, IV, is a prominent architect in Los Angeles. He was elected vice-president of the American Institute of Architects at the last convention. A. Glenn Stanton, IV, who was mentioned in the June notes, is also on the City Planning Commission of Portland. John J. Stanton, IV, formerly a partner in Stearns and Stanton, New York City, is in Portland, where he is representing a firm of naval architects who have been working with the Kaiser shipyards here. Harold H. Cake, VI-A, is vice-president of J. E. Haseltine and Company, an old and very successful firm dealing in hardware and

machinery.'

Howard F. MacMillin, II, formerly president and general manager of the Hydraulic Press Manufacturing Company of Mount Gilead, Ohio, has joined the staff of Arthur D. Little, Inc., of Cambridge, Mass., where he will direct the application to industry of developments of the company's laboratories in the mechanical engineering and applied physics fields. - Edward W. Booth, IX-B, recently dropped in to see Ray. Scripps is with the instrument division of Barbour Stockwell Company, Cambridge, Mass. — Winter Dean, XV, and Mrs. Dean (Muriel Smith'23) have announced the marriage of their daughter,

Laura Winter, to Lawrence Platt, Jr., a lieutenant in the Army Air Forces, at St.

Paul, Minn.

Charles A. Williams, VI, vice-president of the United Illuminating Company, New Haven, Conn., is also president of the New Haven Chamber of Commerce, according to a report from Larcom Randall, VI. — John M. Sherman, X, who heads the research department of the Federal Reserve Bank of Boston, has written a very comprehensive report on "Opportunities for Employment in New England Communities," which illustrates how wartime changes have altered the production pattern and disproportionately increased manufactur-ing employment. Another section discusses the normal distribution of employment during peacetime, and a third part summarizes underlying trends in distribution of the labor force. Forty-five important centers were used for analysis, and much of the data has been tabulated.

Address changes include: W. Robert Barker, XIV, R.D. No. 1, Norwalk, Conn.; Tristram J. Campbell, II, Applied Physics Laboratory, Johns Hopkins University, 10010 Georgia Avenue, Silver Spring, Md.; Ko-Chi Chang, II, China Industrial Company, Chungking, China; Philip H. Hatch, VI, 30 Spring Glen Terrace, Hamden 14, Conn.; Harold F. Stose, XIV, 42–16 202nd Street, Bayside, Long Island, N.Y.; Raphael Van Neste, XIV, St. George Hotel, 1435 East 60th Street, Chicago, Ill.

With the holidays just around the corner, our heartiest good wishes go to you and yours for a particularly merry Christmas and the happiest of all New Years. -RAYMOND A. St. LAURENT, Secretary, Rogers Corporation, Manchester, Conn. CAROLE A. CLARKE, Assistant Secretary, International Standard Électric Corporation, 67 Broad Street, New York 4, N.Y.

1923

Your Class Secretary is with this issue resuming his attention to the monthly notes with great thanks to Howard Russell, who has kept these reports coming to you since last spring. I have been overseas again which explains why Russell could not previously reveal what I was doing. I was one of a group of technicians attached to the United States Strategic Bombing Survey, a project of the Secretary of War. While the war was on, for obvious reasons, this project was not being mentioned.

I was in charge of fire damage analysis work for the physical damage division of the survey. I was traveling over most of the bombed areas in Germany and had headquarters in London. The director of the physical damage division is Harry L. Bowman'14, who used to be in the Civil Engineering Department at Technology. J. W. Beretta, a lieutenant colonel, was chief of the London office of the division, and it was with him that I was most closely associated. Beretta had over three years of experience with the Army outside of the United States, having been at Newfoundland before coming to London. He is now back in the States and as these notes are written expects to leave the Army and return to his consulting engineering firm in San Antonio, Texas. Beretta and I had lunch one day with M. B. Donald, who is one of the two 1923 men in England. Donald is a Course X man and is secretary of the British Institution of Chemical En-

When I was in London in 1943, one of those I ran into was H. C. L. Miller, Jr. We were both guests at dinner at the same house one night, and when we left, late in the evening, I dropped him off (in the blackout) at Brown's Hotel. I did not see him again until we ran into each other at the general officers' mess in London in June. Neither he nor I had been in London during the intervening period. This time he was over there serving as European deputy in charge of a War Department industrial intelligence mission. A few weeks later at the same mess, I ran into R. H. Smith of Cleveland, who was attached to the same industrial intelligence mission and was in London en route to Germany. Both Miller and Smith are now back in the United States. Doc Smith is with the Reliance Electrical and Engineering Company of Cleveland. Miller is out of Federal service, he reports, and has resumed his consulting engineering practice in Richmond, Va. In August, John Burchard came through London, having been on the Continent in connection with business of the Office of Scientific Research and Develop-

Neither Russell nor I could get to the annual Alumni Dinner in Boston in June, but we have a report from George A. Johnson which indicated that the following persons, many of them regulars, were present: Ben Albert, Joseph Fleischer, H. B. Golding, W. B. Greenough, Jr., Luis de Luzuriaga, Gerald Putnam, Edward Rue, A. M.

Valentine, and B. E. Warren.

De Luzuriaga was on from the Philippines for the purpose of entering his son, Eusebio, at the Institute. With him was Mrs. de Luzuriaga, daughter of an American newspaper editor in Manila, James Hudson Curry. She is an opera singer. The Christian Science Monitor carried an account of De Luzuriaga's experiences during the Japanese occupation of the islands. According to the Monitor, he was a captain in the Filipino guerrillas, and his son was a lieutenant. De Luzuriaga reports that the Japanese atrocities defeated the Japanese alternate policy of trying to attract the support of Orientals. As the population saw that the Japanese Greater East Asia Co-Prosperity program was meant for the Japanese alone, nearly every Filipino old enough to understand worked to obstruct the Japanese. Loyal Filipinos obtained arms for the guerrillas by joining the constabulary, and they kept Japanese out of many positions in the government by a policy of having Filipinos in every possible govern-mental position to make it unnecessary for the Japanese to bring in personnel. - William E. R. Covell, a major general, has been in charge of the Services of Supply in the China-Burma-India theater. In June he was awarded the Oak Leaf Cluster of the Distinguished Service Medal. In the C.-B.-I. theater, General Covell supervised the construction of the world's longest military pipe line and the reopening of the land route to China.

Some months back, we quoted a clipping on the activities of Brigadier General Russell E. Randall, Commanding General of the "West China Raiders" of the Fourteenth Air Force. A public relations story about him mentions high points in a spec-

tacular Army career. He was decorated by the Republic of Bolivia in 1941. He was at the Canal Zone when Pearl Harbor was attacked and during the following months was active in pilot rescue work in the Caribbean and the Pacific. In June of 1942, a P-40 which he was flying blew a cylinder head and crashed in the sea. The machete he carried to protect himself from sharks was whipped from his grasp, cutting a long gash in his arm. A rescue line from a boat trying to pick him up in a rough sea broke his arm in two places. Thereafter, he served with the Sixth Air Force in California and with the Fourth Air Force, in which he was charged with fighter protection of the West Coast. He later served with the Tenth Air Force in Burma, flying in the Moguang Valley and Myitkyina campaigns. In all, he flew more than 50 combat missions over North Burma.

Clark Kittrell, a colonel in the Corps of Engineers, has been named executive officer of the Army-Navy Liquidation Commissioner's Office, which will dispose of all overseas surplus of the armed forces. Colonel Kittrell has most recently served a year in North Africa, Italy, and France. He was decorated with the Legion of Merit for engineering work on the defenses of Panama after Pearl Harbor. Other work on the construction of airfields and defenses in Central and South America took him from Guatemala to Peru and Ecuador and the Galapagos Islands. In 1942, and until May, 1944, he held division engineer assign-

ments at Baltimore and Chicago.

Philip L. Riley has written Professor Horwood'16 that he is health education officer at the Institute of Inter-American Affairs in the division of health and sanitation. He is assigned to the Caribbean and South American areas. His present job is to work with the national departments of health in these countries and to aid them in establishing and operating divisions of health education as part of their schedule. The work consists largely of drawing plans for such activity, setting up the necessary organization, and then training the staff of nationals to do the work. At the time he wrote, in the middle of August, he was at Ciudad Trujillo, capital of the Dominican Republic, meeting there with a threeweeks institute for elementary schoolteachers on home sanitation, intestinal parasitosis, and the diarrheas. This is an activity sponsored by the national ministry of health in co-operation with the national ministry of education, and is really one activity of the newly inaugurated division of health education of the ministry of health. From there he was scheduled to go in October to Venezuela, then Colombia, Ecuador, Peru, Bolivia, and Chile, making a trip of 10 months in all.

A clipping in the New York Sun telling about the setting up of military govern-ment in Cologne, Germany, last March, mentions that Albert Schweizer, New York City architect, was public relations counsel and civil administration officer of the American Allied Military Government in Cologne. Captain Schweizer was acting dean and director of the school of architecture and allied arts at New York University from 1940 until his call to active Army service in 1943. He is the author of several books on city planning and was the principal planning technician of the National

Resources Planning Board and planning consultant for the Civil Aeronautics Administration. His wife is a teacher at the Cherry Lawn School, Darien, Conn., and two daughters attend the Emma Willard

School in Buffalo.

David M. Houston was appointed in September as director of the export department of the Hercules Powder Company of Wilmington, Del. The clipping in the Wilmington Journal-Every Evening reports that Houston has two sons who, with their mother, will move from Parlin, N.J., to Wilmington, Del. - R. G. Rincliffe was elected vice-president in charge of electric operations of the Philadelphia Electric Company in April. Since 1938, he has held assignments as purchasing agent and manager of electric station operations for the same company. — In May, Harland C. Forbes was elected vice-president of Consolidated Edison Company of New York, Inc., in charge of development and plan-ning. He had been an assistant vice-president of the company since 1940, having joined New York Edison Company in 1924.

According to a clipping from the Hart-ford, Conn., *Times* in September, the name of George A. Rowen was being presented at the Democratic caucus for members of the public building commission of Windsor, Conn. He is a member of the firm of Parker Danner Company of Wilson, distributors of construction machinery. He has been a resident of Windsor for four years, is married, and has one daughter. — In June, the Public Service Electric and Gas Company of New Jersey announced that Edmund J. Thimme had been appointed division superintendent of the Passaic division of the electric distribution department. The above note is available because Jack Keck passed it along to Howard Russell. -C. P. Thayer, who is secretary of the Technology Club of Miami, reports that he has been elected president of the Dade

County Juvenile Council.

Howard Russell relates that in June, while walking down Michigan Avenue in Chicago one evening he ran into Philip Coleman. Howard says that on seeing him Phil's mouth dropped open about a foot but that later he was able to close it around a couple of steins of beer. The encounter produced, however, the following information about a number of mutual acquaintances: Elliott Adams is chief engineer at the Racine, Wis., plant of the Massey-Harris Harvester Company; Benjamin P. Lane is Chicago branch manager of the Sullivan Machinery Company; Francis P. Squibb is with the Sherwin-Williams Paint Company in Chicago, and important enough there, says Phil, to have a couple of secretaries. — Thanks to O. B. Denison'll, I have a clipping about Walter F. Munford of Grafton, who has been Worcester district manager of operations for the American Steel and Wire Company. In July, he was named assistant vice-president in charge of operations for the company with head-quarters in Cleveland. Munford has two sons — Robert W. Munford, with the Army Air Forces, and Walter F. Munford, Jr., a student at Worcester Academy. — Asher Z. Cohen '21, a colonel commanding the Delaware Ordnance Depot in Pedricktown, N.J., reports that Jules H. Werner, a captain, has recently been assigned to the Pedricktown Depot as post engineer.

Some months ago, I wrote Alan Brantingham to ask him about a change in his residential address. He explained it as merely the result of buying a new house. He says he is still in the aluminum and magnesium foundry business at Rockford, Ill. The company of which he is president is Ebaloy Foundries, Inc. - David Kaufman, a captain, is at Barksdale Field, Shreveport. — Paul J. Moore is with the Star Electric Motor Company in Bloomfield, N.J. - Jnanendra M. Sil is director of the Regional Center, Colaba Observatory, in Bombay, India. — Benjamin Powell is with the Bureau of Reclamation, Pueblo, Colo. - Willis E. Teale, a colonel, is at the headquarters of the engineer school at Fort Belvoir, Virginia. — Horatio L. Bond, Secretary, 457 Washington Street, Braintree 84, Mass. Howard F. Russell, Assistant Secretary, Improved Risk Mutuals, 60 John Street, New York 7, N.Y.

Last month I mentioned the return of Frank Corliss and his wife and daughter, from the Philippines, where they had been held prisoners by the Japanese in Santo Tomas Camp. The following quotations are taken from the Boston Globe of April 28: The family was taken by the Japs January 5, 1942, when Susan was only 18 months old. She was born in Manila. Corliss, a graduate of Boston Latin School and M.I.T., had gone to the Philippines to take charge of General Electric appliance sales. With him went his wife, the former Grace Barker, an English girl he married in New York in 1939. . . . The Japs removed them to the Santo Tomas Camp on January 6, 1942. Mrs. Corliss had to carry Susan, and he lugged two suitcases and a blanket slung over his shoulder. His wife was sick almost two years during the imprisonment. An American doctor prevailed upon authorities to have her removed to an outside hospital. Later, Corliss was permitted to build a bamboo shack, where she was able to take sunbaths. The first couple of years were not too bad when you compared them with what came after. A camp commandant said the Japs could afford to treat prisoners well as long as they were winning.
"In February, 1944, the Jap military

took over. They completely isolated us. Allowed no more packages from our friends. I lost 80 pounds during the four years. I lost 40 pounds in six months in 1944. Corliss saw one of the first American tanks to enter the camp. 'Susan knew the Americans were coming all the time. She even told me they were coming that night,' Corliss said. The Corliss family was flown to Leyte on March 13. They took an Army transport from there to the United States. Their plans for the future have not been

made.

From the Boston Herald of September 28 comes the following item: "... James W. Lowry, 43, of Lexington, an electrical engineer for the Boston Elevated, ... who died ... [September 27] in the Massachusetts Marsail Hamiltonian Company of the sachusetts Memorial Hospital, was graduated from . . . Technology in 1925. He was the first president of the Lexington Arts and Crafts Society, and a member of the board of directors of the Minute Man Crafts, a member of the Electrical Engineers Society of Boston: worthy patron of Lexington Chapter, O. E. S., and a

member of Richard C. MacLaurin Lodge, A. F. & A. M., Cambridge: Newton Royal Arch Chapter; St. Paul's Royal Arch Chapter: Gethsemane Commandery, K. T., Newtonville; Aleppo Temple, Mystic Shrine, and Hancock Congregational Church, Lexington. He leaves his wife, a son, James, Jr., and his mother, Mrs. Margaret Lowry. From the Class, as well as myself, I should like to express our sympathy to his family in this bereavement. We can say little here, but what we say comes from our hearts.

From the St. Louis Globe-Democrat comes the following: "McDonnell Aircraft Corporation will begin moving its widely scattered plants into the Curtiss-Wright Aviation Corporation site at Lambert-St. Louis Field about August 15, and will occupy the major portion of the plant by January 1, James S. McDonnell, Jr. [XVI], president of the firm, announced yesterday. By the first of the year, McDonnell will be occupying 1,209,000 square feet of the plant, with the Reconstruction Finance Corporation retaining 259,000 square feet for storage purposes. Peak employment by McDonnell, to be reached by January 1, will be 5,000 people and will continue at least through July 31, 1946, McDonnell stated, on the basis of present contracts. Present employment is about 3,000.'

O. B. Denison sends the following clipping from the Worcester Telegram: Ralph F. Gow of 14 Monmouth Road, Worcester, Mass., director of the Industrial Personnel Division, Army Service forces, . . was awarded [on September 14] the Distinguished Service Medal. Col. Gow, former works manager of the Norton Co., received the medal for his services as director of the industrial personnel division and chief of the industrial services division in the War Department's Bureau of Public Relations. The citation said: 'Through skill, devotion to duty and untiring efforts, Col. Gow has contributed materially to the successful prosecution of the War.' Col. Gow reported for duty with the Army in May, 1942, serving on the Boston Staff of the Ordnance Department, and supervised U. S. Army contracts throughout New England. He was appointed director of the Industrial Personnel Division in September, 1944. Before entering the service, Col. Gow was on the board of directors of the Associated Charities and Worcester Y.M.C.A. He was also chairman of the education division of the 'Y' and a member of the Kiwanis Club.

The following news release from Caserta, Italy, was received on September 21: "Lieutenant Colonel Henry N. Sachs of New York City has been decorated with the Legion of Merit for outstanding services as technical adviser to the chief ordnance officer in the Mediterranean theater of operations. The official citation accompanying the award reads in part: 'Colonel Sachs carried out his duties painstakingly and conscientiously, and through his unremitting efforts, extensive practical experience and remarkable originality, combined with admirable qualities of patience and persistence, he instituted a preventive maintenance program which resulted in a conservation of vehicles and material heretofore deemed impossible. His original creation of the character "Dead-line Dan," in cartoons and posters, cap-tured the imagination of troops throughout the theater and culminated in a cheerful compliance with preventive maintenance directives that surpassed all expectations and resulted in tremendous savings to the government of valuable time and materials.' Colonel Sachs has been overseas 32 months, and saw combat with the First Engineer Special Brigade. He was awarded the Silver Star for gallantry in action during the Pearl Harbor attack and also wears the American Defense Ribbon with one star, the Asiatic-Pacific Theater Ribbon with one Battle Participation Star and the Mediterranean Theater Ribbon with two Battle Participation Stars." -- Hollis F. WARE, General Secretary, Post Office Box 52, Godfrey, Ill. F. Leroy Foster, Assistant Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

1926

Cyril Stanley Smith, according to a recent official announcement, will be director of the new Institute of Metals at the University of Chicago. The Institute of Metals, together with the Institute of Nuclear Physics, has recently been established to carry on research in atomic energy and related fields. Dr. Smith was research metallurgist for the American Brass Company for many years prior to his appointment to the staff of the bomb laboratory at Los Alamos. He is also known for his work with Martha Teach Gnudi in translating Biringuccio's De la

A recent news story from the Philippines described a textile plant in Manila of which Juan Villanueva is superintendent. - Elton Staples, now a lieutenant colonel in the Quartermaster Corps, is stationed in Germany. His family has recently moved back to Wellesley, where they lived for a number of years before the war. — Bill Rivers, who was in this country for several months on leave from his job with the Standard-Vacuum Oil Company in India, recently visited the Institute on the eve of his return to Colombo. He and Mrs. Rivers spent most of their time with his mother in North Carolina. - Willard Edwards, now a lieutenant commander in the Navy, recently was stationed at Technology in the naval radar school. - Robert C. Dean, now out of the Army, is again practicing architecture in Boston. — John P. Larkin is now in McKeesport, Pa., with the Firth-Sterling Steel Company.

Jim Drain's business has brought him to the Institute on frequent visits in recent months, and the Secretary is happy to report that he is flourishing as vice-president in charge of engineering of the Sullivan Machinery Company. — Edward J. Mc-Grew, Jr., has returned to the New York City department of public works, following service as a colonel in the office of the Undersecretary of War. — William B. Millar, perhaps our most traveled class-mate, is back in New York after a period of duty in Van Horn, Texas. — Robert W. Richardson is now using a Brookline address, after having been a lieutenant commander in the Navy. — James R. Killian, JR ... General Secretary, Room 3-208, M.I.T., Cambridge 39, Mass.

1927

A member of the Class has checked in as having had a part in the development of

the atomic bomb. Bert Houghton's letter with this news is quoted herewith in full: 'I received your letter in Santa Fé shortly before leaving there, but was busy packing up and getting ready to go. I note that your letter was dated July 16. That was a very important date for me and for a great many other fellows who were down on the desert near Alamogordo that morning. Yes, I was there and saw the thing go off, and my next step was the writing of a report so I could get back into civilian employment again. I left the employ of the Tide Water Associated Oil Company on the 27th of March to go to Santa Fé to work for Uncle Sam. I am heartily grateful for having had the opportunity to sit in, in a very minor capacity, on such an important project. It was lots of fun and certainly eye-opening. Very shortly, I leave Houston to work for another Tech man, Roland F. Beers, who took his graduate work at the Institute. I expect to go to Canada as geophysical supervisor for the Geotechnical Corporation. My first location will be Bow Island, Alberta, Canada, and I shall be glad to hear from you and from any of our classmates there. I have been in geophysical prospecting since 1929 and find it as interesting as ever, although it is a bit harder to pick up and move than it used to be. I am now in the agonizing process of eliminating the nonessentials or at least some of them) from our household goods and selling the house here in Houston. I have met one or two of the Shell geologists and geophysicists in Houston and Tulsa, though I don't suppose you would know them. I used to see Mooney Owen in Tulsa when he was with Sears Roebuck, and Ted Mangelsdort when he was in Port Arthur, but there is no very active Technology group in this area."

Ervin H. Bramhall writes of his activities

as follows: "I was assigned to the Army Air Forces as operations analyst in July, 1944, and arrived in Honolulu in August and did my 'daily dozen' at the head-quarters at Hickam Field. Later, after I'd had one spin around the Pacific, more travel came when all headquarters were moved to Guam, from which station I flew to farther 'points west, south, and north.' Any explanation of my duties must be left to future correspondence. When 'all over' sounded, I returned to Honolulu to begin my work as associate professor of physics at the University of Hawaii, which change in routing promises to be very interesting. Paraphrasing the remark 'one behind every bush,' I might say there seemed to be an M.I.T. man on every atoll, with more coming in with the surf. A lot of grandchildren are going to grow restless listening to yarns beginning In the old days, when men were men. . . . Gettogethers should all be well-sprinkled with tall tales for a while now.'

The following will bring R. M. Smith's friends up to date concerning his activities: "I came to Ilion on September 5 after spending four years in the Lake City Ordnance Plant at Independence, Mo. This was a government owned, contractor operated, small arms ammunition plant. I held several different jobs, but since 1943 had been superintendent of the tool and gauge section. That covered the supervision of manufacture, procurement, and inspection, and control of inventories of all tools, gauges,

and precision measuring equipment. We also handle the tooling of Denver, Utah, Lowell, Kings Mills, Evansville, Des Moines, and St. Louis ordnance plants. For two years, I served on the ordnance prime contractor perishable tool committee. My present job is that of supervisor of tool design, covering all the tool and gauge design, both in the plant and contracted out, for the manufacture of sporting guns (new line) in the Ilion Plant of the Remington Arms Company." — Joseph S. Harris, General Secretary, Shell Oil Company, Inc., 50 West 50th Street, New York, N.Y. DWIGHT C. ARNOLD, Assistant Secretary, Stevens-Arnold Company, Inc., 22

1932

Elkins Street, South Boston 27, Mass.

Now that we are all in the toils of reconversion and looking forward to peace, we must not forget what the world has been through. Particularly, we must not forget Lee Burr, who died a hero. The following is a copy of the presidential citation awarding him the Navy Cross: "For extraordinary heroism while serving as staff watch officer on board the U.S.S. Callaway, flagship of Transport Division Twenty-Six, when that vessel was struck by a Japanese plane off the Coast of Luzon in the Philippines, January 8, 1945. At his post on the starboard wing of the bridge when the enemy craft exploded close by his station, starting raging fires and inflicting serious casualties on the ship's company, Lieutenant Commander Burr unhesitatingly rushed forward, although his clothing was aflame, to aid crewmen trapped in the 20mm. clipping room abaft the bridge and, disregarding the searing pain of burns received in the initial blast, resolutely entered the twisted, blazing compartment where ready ammunition was exploding violently. Carrying one man to safety, he gallantly forced his way back through the blinding smoke and scorching flames for the second casualty and succeeded in removing him despite additional burns sustained in his struggle to extricate the unconscious man. Steadfastly refusing medical care, he staunchly continued his valiant efforts, fighting the spreading fires and rendering assistance wherever possible until ordered to sick bay by his commanding officer. Unwavering in his devotion to duty, he insisted on briefing his replacement in the details of the beachmaster's responsibilities and lucidly discussed with the attack force control officer such problems as might arise during the coming assault against Luzon, ultimately lapsing into a coma from which he never recovered. Concerned only for the safety of his ship and her company, Lieutenant Commander Burr, by his indomitable determination and selfsacrificing conduct in the face of apparent disaster, served as an inspiring example to the officers and men with whom he served, and his great personal courage throughout a critical period upheld the highest traditions of the United States Naval Service. He gallantly gave his life for his country." Minot R. S. Bridgham, a lieutenant

colonel, has recently returned to the United States from Manila after 32 months of overseas service. Before leaving for the States, Colonel Bridgham was awarded the Bronze Star medal for meritorious service in the

southwest Pacific area.

We are indebted to Professor Locke' 96 for the following newsy items: (1) Louis C. Raymond has lately returned to New York City after two months of professional work in Mexico. Formerly with the Tariff Commission in Washington, he is now a mining geologist on the staff of Ford, Bacon, and Davis, consulting engineers, 39 Broadway, New York. Mr. Raymond's home address is Hardscrabble Road, Chappaqua, N.Y. (2) Harry L. Johnson has summarized his career since he returned to Technology for special work in Course XV during 1937-1938. After that he went with the Jackson Company in Tampa, Fla., remaining two years as buyer and traffic manager. He left Tampa for the Westinghouse purchasing department, working successively in their South Philadelphia, Lima, and East Pittsburgh plants as assistant buyer and buyer. He next spent a few months in the Pittsburgh headquarters on the staff of the vice-president of purchases and traffic, being transferred to East Pittsburgh in May, 1942, as staff assistant to the purchasing agent. Shortly thereafter, he was promoted to the position of assistant purchasing agent, which he still holds. His work has included all phases of purchasing, includ-ing specifications, legal matters, buying and expediting problems, as well as organization and personnel. Much of his time has been taken by problems raised by the war such as priorities, allocations, war contract terminations, surplus materials, subcontracting, selective service and price control. With his engineering training and his liking for business and economic problems, he has found industrial purchasing to be the most interesting and absorbing work. He and his family live in Edgewood, which is a suburb of Pittsburgh, and they like the town very much. They have two children, a boy four years old and a girl two years old.

Martin Meyer has written to tell me of the arrival of his youngest son, Jimmy, on April 3. Though Martin is very busy, he recently talked with Manley St. Denis (formerly Manlio Fra Giacomo) when he was in Washington. Manley was still a naval architect with the Navy Department. His twin girls are getting quite big, and their apartment is not large enough. They have broken ground for a home in suburban

Cheverly, Md.

Have you sent in that check to the Alumni Fund? As a Class we are doing better each year, but we still have not reached our quota. The Fund needs your support. — CLARENCE M. CHASE, JR., General Secretary, 1207 West 7th Street, Plainfield, N.J. Assistant Secretaries: CARROLL L. WILSON, 1530 P Street, Northwest, Washington, D.C.; WILLIAM A. KIRKPATRICK, Allied Paper Mills, Kalamazoo, Mich.

Your Assistant Secretary is glad to join the rest of the Class in congratulating George Henning on his promotion to the presidency of the Belmont Smelting and Refining Works. George has been treasurer of the company for many years, and I am sure that the company is assured of successful management under his capable leader-

The Navy has informed us that Leighton R. Rickards, a senior lieutenant, has reported for duty at the Naval Air Station in Oakland, Calif. We are glad to record the engagement of our good friend Outerbridge Horsey to Mary Hamilton Lee of Baltimore. Outerbridge is still a foreign service officer in the Department of State. Many classmates will recall Outerbridge's hectic exit from the Balkans area where he was representing the State Department at the time the Germans moved in. — George Henning, Jr., General Secretary, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn, N.Y. ROBERT M. Kimbali, Assistant Secretary, Room 3-208, M.I.T., Cambridge 39, Mass.

1936

Despite the fact that we are all poor correspondents, there is some news of our Class gathered from various sources. We are particularly indebted this month to Professor J. B. Babcock, who has published a "Chi Epsilon News Letter" containing information about some of our group. The following is quoted therefrom: "Al Bagnulo, Colonel, 1321st Engineer General Service Regiment, went into the Regular Army after graduation. . . . He served in the West Indies for four years before going to the European theater. From November, 1944, until V-E Day his regiment was assigned to the support of the United States Seventh Army and the French First Army. This involved construction and repair of roads, bridges, engineer depots, and so forth. On August 6 he was on a Navy troop transport en route to the Pacific, but we hope it was diverted to the United States. Charlie Betts, construction superintendent, Montgomery Ward and Company, has been doing work all over the eastern states for the past two years. Previously, he had been with United States Gypsum as a research engineer on construction systems and later was construction superintendent on war plants in the Middle West. He has three daughters. - Bernie Gordon, a junior grade lieutenant with a combat demolition unit, was at the Amphibious Training Base, Fort Pierce, Fla., on V-J Day. Previously, he was public works and facilities officer with the Naval Air Transport Service at various stations.

"Major Dick Hickman is located at

Climatic Hangar Project Office, Eglin Field, Florida. — Tony Hittl, an engineer with the Linde Air Products Company labora-tory in Tonawanda, N.Y., is engaged in research and development of equipment for manufacture and distribution of oxygen. — Ed Kass was working for E. T. Killam, consulting sanitary engineer, in New York the last time we heard. - Bob Sawyer, a captain in the Air Transport Command, is at an air base in Tripoli, where he is air-craft maintenance officer (mostly on C-46 and C-54 planes) with duties ranging from engineering to all types of administrative and personnel duties. - Al Thomas, a major in the Sanitary Corps, has returned from Europe, where he was a medical inspector for the 104th Infantry Division (Terry Allen's Timber Wolves) from Cherbourg to Antwerp to Aachen to Cologne and thence to a junction with the Russians just before V-E Day. He has one daughter and one son.'

Our other big source of news is the press releases. Probably deserving first mention is the news of our President, Jack Austin, a lieutenant colonel in the Coast Artillery Corps: "For meritorious achievement in connection with military operations against the enemy in New Guinea, the Admiralty Islands, Dutch New Guinea, and the Netherlands East Indies from May, 1943, to July, 1944," he has received a citation from Sixth Army headquarters. Jack was an operations officer for antiaircraft artillery units during the planning phase of these operations and a member of the task forces during the execution of them. Nice work, -Other news from the military is word that Vincent Estabrook was a major with the Quartermaster Section of the South Pacific Base Command, stationed in New Caledonia. He entered the service early in 1942 and was liaison officer on the division staff at the time he was sent overseas. A later communiqué lists Estabrook as executive officer of the Headquarters Quartermaster Section, located on Luzon in the

Philippine Islands.

Also a major in the Army is Boris Maximoff. He has recently been assigned to headquarters, Air Technical Service Command, at Wright Field. Serving as a signals engineering officer with the headquarters of the Eighth Air Force, he was overseas from June, 1942, to March, 1945. He has been awarded the Bronze Star medal. -Phil Gilinson, we understand, has been doing a lot of talking about the weather. Major Gilinson is station weather officer at Meeks Field, Iceland, where he supplies weather data for home-coming combat ships. Gilinson is a veteran North Atlantic forecaster, having been in charge of the weather detachment with the first task force to arrive at Iceland in September, 1941. In August, 1942, he was transferred to Bangor, Maine, and since then has served at Manchester, N.H., and LaGuardia Field before returning to Iceland. In July, 1943, while stationed in Maine, he was married to Hulda Einarsdotter, an Icelandic girl, and they have a year-old son.

Other fellows with the armed forces are making the news for reasons other than their military record. We were all very happy to hear that Harry Essley, a junior grade lieutenant, was married on July 2. The bride was the former Elizabeth Gilman of Little Creek, Va., an ensign in the waves. At that time, Harry was stationed at the Naval Air Station at Norfolk, Va. — Brent Lowe, a lieutenant in the Naval Reserve, also gets into the news because on October 13 his wife presented him with a daughter, Choral Carleson Lowe, Jr. Brent is still stationed in Washington and living in

Alexandria.

Bob Worden has been getting his name into print lately. He has recently joined John I. Thompson and Company, Washington consulting engineers, as a partner in charge of management engineering services. Bob had been industrial relations director and personnel manager for the Campbell Soup Company. While with that company, he was also active in civic groups, being chairman of the industrial relations committee of the chamber of commerce, industry member of the Camden area management-labor committee, and industry panel member on the Third Regional War Labor Board. — Also progressing is Milton Brooks, who has been made Washington district manager for the Baldwin Locomotive Works. Milt has been handling Navy and maritime locomotive and marine prod.

ucts orders for some time. - Gordon T. Vaala, has also received an advancement, having been appointed assistant director of the laboratory at the Fairfield, Conn., plant of the Du Pont fabrics division. Previously, Dr. Vaala was a group leader at the Wilmington Experimental Station in the chemical department.

It seems hard to believe, but next June we shall celebrate our 10th anniversary! At the time of this writing, definite plans have not been formulated for the reunion, but we hope to have some sort of festivities over the week end of Saturday, June 8. Watch these columns for further announcements. — Anton E. Hittl, General Secretary, 530 Norwood Avenue, Buffalo 13, N.Y.

1938

We thought it would never happen, but Jim Gilliss, that salty commodore of the dinghy fleet, has actually stepped off the deep end. It is a pleasure to announce his marriage on September 22 to Edith Daniels of New Rochelle, N.Y. Frank Gardner and your long-lost Secretary represented the Class in the wedding party — and a very pleasant duty it was. Jim and Edith spent a brief honeymoon in the Poconos and have managed, somehow, to find an apartment in Greenwich Village to move into, from which Jim will commute to Kearny, N.J., to the Federal Shipbuilding yard. Dick Muther, a junior grade lieutenant, managed to get in from Hamilton, Ohio, to attend the ceremony and kiss the bride — and bridesmaids. Dick is working between Navy duties on rewriting some chapters of his book, Production Line Technique, which has been published by McGraw-Hill.

Quite a few other classmates have taken the big step_recently. Eben O'Brien was married last February in Baton Rouge, La., to Mildred Kidd. Eben is working down there as a petroleum engineer. King Coombs was also married last February. Our big crew captain was married in Fort Pierce, Fla., to Julia Brewer. King was a captain in the Army Engineers at the time and was stationed at the Naval Amphibious Training Base at Fort Pierce as a member of the Engineer Board. Another February marriage was that of John Francis to Margaret Melvin on February 27. They are living in Newark, N.J. Fred Strassner was married last May 6 in Maplewood, N.J., to Ida Sophia Goewey. Dan Phillips was one of the wedding ushers for Fred. The couple are living in East Orange, and Fred is working at the propeller division of Curtiss-Wright in Caldwell, N.J., where he is head of the design and manufacturing section of the production engineering department.
John Mahoney was married in Westfield,
N.J., on July 11 to Rita Mahoney. John is on the research staff at the Merck Company.

Several men have taken the halfway step. Harold James became engaged in March to Gay Chasman. After finishing at Technology, Harold got his LL.B. at Columbia in 1941, was one of the editors of the Columbia Law Review, and was admitted to the New York bar. Later he enlisted and served in the Atlantic and Pacific on the U.S.S. Alabama as machine gun and catapult officer. He is now a lieutenant on the staff of the officers' ordnance school in Washington. In July there were two engagements: that of Bob Johnson, a major in

the Army stationed in Boston, to Patricia Cort of Hopkinton, Mass.; and that of Horace Homer to Roberta Vance of Staunton, Va. The latter were scheduled to be married in Staunton last August 21, but we have heard nothing since their engagement notice and so have no official confirmation of the marriage as yet. Finally, Don Mac-Donald was engaged in July to Jean Carroll of Bronxville, N.Y. Don is a lieutenant in the Army, went through the Civil Affairs Training School at Harvard, and is stationed in Monterey, Calif.

We had the good fortune early in September to run into Frank Kearny, who has been at the Navy depot in Mechanicsburg, Pa., since returning from nearly two years of wandering around in the Pacific. Frank has high hopes of getting back into civvies this fall; and we know that Mary Frances (Mrs. Kearny) and Frankie, Jr., are hoping right along with him. — Jim Gilliss tells us that Lloyd Bergeson has been making a very good showing these past two summers in racing his "New York 30" (a sailboat to us landlubbers) in the Chesapeake. Lloyd spends most of his time in Philadelphia, at the Cramp Shipbuilding yard, but the road between Phillie and the Chesapeake is well worn by the Bergesons' week-end travels. — For more miscellaneous news about classmates, Charles Small is a captain in the procurement division of the Air Technical Service Command at Wright Field, Ohio. Andrew Stergion, an Army lieutenant, is the officer in charge of the quality control section, armor test branch, at the Aberdeen Proving Ground in Maryland. Bob Mancib is a lieutenant in the Air Transport Command at Miami. Bob has 1,800 hours of flying time to his credit and has completed 40 over-water

Alvin C. Welling recently received the Legion of Merit for his pioneer work on the Alcan Highway through Canada and Alaska. Now on duty in the Far East as chief engineer of the India-Burma theater of operations, Colonel Welling received the award from Brigadier General John A. Warden, Acting Commanding General of the India-Burma Services of Supply, during colorful retreat ceremonies held in front of the S.O.S. headquarters in New Delhi. Without the loss of a man, the citation points out, Colonel Welling supervised the movement of troops and equipment from Dawson Creek to Fort Nelson, British Columbia, and "faced with the necessity of completing the move in the Arctic winter before the spring thaws made the muskeg wastes impassable, Colonel Welling with rare energy and ability laid out the route through 350 miles of rugged country and located the camp sites." He followed this up by surveying all possible routes of a new 500-mile section of the road between Fort St. John and Watson. He slogged along with his men in temperatures that hit 50 degrees below zero, traveled by dog sled, plane, and on horseback through hitherto uncharted territory, and completed this section of the road before the scheduled

Ciro Scalingi is a lieutenant colonel and has been executive officer of the supply division of the Eighth Air Force Station, responsible for procuring all types of Air Corps supplies. Howard Ness is an ensign, serving in the Pacific on board the U.S.S.

Kilty, a converted World War I four-stack destroyer, and saw considerable action in the Philippines campaign. Finally, we have word that Donald Barnaby, a junior grade lieutenant, was awarded the Bronze Star medal for work in connection with saving the U.S.S. Franklin. Abbott Byfield, who has been at the Institute during the war doing National Defense Research Committee liaison work for Doc Lewis, has returned to Wisconsin and the engineering department of Kimberly-Clark. - DALB F. MORGAN, General Secretary, Carbide and Carbon Chemicals Corporation, 30 East 42d Street, New York, N.Y. ALBERT O. WILSON, JR., Assistant Secretary, 32 Bertwell Road, Lexington 73, Mass.

1939

To catch up on recent weddings - a review of the clippings shows the following: Norman MacBeth to Helen Elizabeth Vaniman of New York City; Harold L. Smith to Flora Evelyn Lancaster of Yates Center, Kansas; Charles MacKinnon, an Army captain, to Lois Rosaire Kelley of Greens Farms, Conn.; J. Hardoncourt Trepagnier to Patricia Moseley of Wilmington, Del.; Carl Lenk to Dorothy Harrison Carroll of Nyack, N.Y.; and William Brewster, a major, to Lucile Sibley Christmas of Washington, D.C. Engagements are as follows: Orlando C. de Aragon, an ensign, to Lillian Garcia of Miami, Fla.; Alexander Squire to Isabelle L. Kerr of Arlington, Mass., Alex now being a metallurgist at the Watertown Arsenal; Latimer MacMillan, Jr., an Army captain, to Gertrude Kincaid Hodges of Waycross, Ga.; Eric Nelson to Marie Louise Bauer of Larchmont, N.Y.; and Herman H. Hanson, a lieutenant in the Naval Reserve, to Mary Gilbert, of Sharon, Pa. Herm, last seen at the Commodore in New York two years ago, was back at the Institute studying again.

A brief item about Walter H. Pulsifer, Jr., tells us that he has been a captain with the 839th Army Antiaircraft (automatic weapons) Battalion, that his pre-war work was in small house design, and that he is currently studying French in an eight-weeks course at the Sorbonne University in Paris. - A news release from Seattle says that John L. Salmon was promoted from the rank of second, to first, lieutenant early in September. John is a project engineer for the Alaskan Department Engineers headquarters. After enlisting as a private on January 13, 1944, Lieutenant Salmon was graduated from Engineer Officer Candidate School at Fort Belvoir, Virginia, on October 4, 1944. His first assignment was with the Engineers' Reserve Training Corps at Fort Lewis, Washington, but three months later he was on his way to the Alaskan Department and assignment as assistant post engineer at Northway, Alaska. Before entering the Army, John was employed as a civil engineer by the Panama Construction Company on construction

We hear through Charles E Locke'96 that Alfred Miller recently resigned from the Aluminum Company of Canada and opened his own consulting office in Montreal. He is doing work in mechanical, mining, and metallurgical fields, specializing in fabrication plants. Since each one is different, there is no monotony in his

work in that country.

work. In mining, he is a consultant for a Toronto company which plans to diamond drill a mining property in the Noranda district of Quebec. Another consulting job is for a Montreal company. He has made an examination of a mining property for them in the Sudbury district of Ontario, and the expectation is that diamond drilling will be done on that property in the near future. In the mechanical field he is looking after the design and layout of a very modern foil rolling mill and foil finishing mill at Three Rivers, Quebec, with the likelihood that work at other similar plants will follow elsewhere later.

A press release from Aberdeen Proving Ground, Md., gives us the following information: "Recently promoted to the rank of captain was Joseph K. Dana. Captain Dana is adjutant of the bomb disposal center at the Aberdeen Proving Ground. Formerly he was personnel director for the Kendall Mills, Walpole, Mass., in their cotton textile section. Captain Dana is a specialist in the tricky art of deactivating unexploded bombs, shells, booby traps, and land mines. As adjutant of the bomb disposal center, he has played a vital part in the training of squads now operating in all parts of the world on deactivation jobs."

A news release from the General Electric Company dated last August runs as follows: "Granville E. Carleton, engineer in the aircraft gas turbine engineering division of the General Electric Company's River Works at Lynn, Mass., is now engaged in vital design and production engineering on gear-driven superchargers, which enable America's fighting planes to surpass enemy aircraft in range, speed and altitude. Mr. Carleton's work involves a thorough checking of each supercharger that goes into production to insure its perfection in performance. Frequently he must make design changes and recommendations for improved production methods from his observation of shop assembly of the complete unit. An employee of the General Electric Company for the past six years, Mr. Carleton in 1939 began work at Schenectady, N.Y., as a test engineer."

And again through the courtesy of a press release from Aberdeen Proving Ground, we are brought up to date on the activities of E. F. Losco, as follows: "The American theater of operations is a big area, but for a

former resident of Revere, Mass., that bit of blue service ribbon piped with red and white means just one little spot: the coldest spot on this continent. He is Captain E. F. Losco, 28, of 21 Furness Street, Revere, now executive officer of the ammunition test branch of the world's largest ordnance research and development center, Aberdeen Proving Ground, Md. An expert on mobile artillery and ammunition, he has done work on all calibers from the 20-millimeter piece to the 240-millimeter cannon. Captain Losco's American theater of operations service was at Shilo Camp, Manitoba, Canada - the place which, elaborate meteorological pretesting determined, would be the coldest spot on the North American continent over a certain period of months. There the Ordnance Department set up a proving ground to scrutinize the performance of material under sub-zero conditions. In fact, testing was called off when the mercury 'rose' to above 20 degrees below zero. Furthermore, Captain Losco has seen service in the European theater, going across the Atlantic to observe the performance of Ordnance weapons and machinery under actual fire. Before entering the service, Captain Losco was associated with the Westinghouse Manufacturing Company in Pittsburgh, Pa. He was also employed as a research fellow at the Carnegie Institute of Technology. He received his master of science degree from Carnegie in 1941." — STUART PAIGE, General Secretary, 88 Van Giesen Street, Richland, Wash. ROBERT C. CASSELMAN, Assistant Secretary, 271 Cypress Street, Newton Center 59,

1943

Some news which is not new and not about a member of our Class nevertheless seems to call for mention here, the name has so frequently appeared just above our notes. Fred Baumann, Secretary of 1942, has been reported missing over Tokyo. He was bombardier of a B-29, which was last seen to fall into Tokyo Bay. Fred had completed 11 missions. We extend our deepest sympathy to his family and friends.

It is said that we must take the good with the bad, so here is some very good news. Angel del Valle, an Army lieutenant, has been awarded the Silver Star for gallantry in action during the Mindanao campaign. Del Valle is a member of a 90-

millimeter antiaircraft gun battalion which is a part of the Fourteenth Antiaircraft Command. He was decorated when he, another officer, and two enlisted men sprinted more than 50 yards across open terrain under heavy enemy automatic-weapon fire, to man a 90-millimeter gun situated in an open field. Their firing aided in immediate silencing of the enemy fire. Del Valle, who was commissioned in the Coast Artillery Corps, has been in the Pacific since March, 1944.

Pacific since March, 1944.
Word has reached us incidentally, about J. R. Maroni, a second-class seaman, who is with the Ames Aeronautical Laboratory Division, at the Naval Air Station at Moffett Field, Calif. After he left Technology, he worked first for the Sperry Gyroscope research laboratories, mostly on the development of the A-12 automatic pilot, and then later on for the Navy. His French birth made it impossible for him to receive his commission. He succeeded in getting assigned to research in the Navy and was finally transferred to the naval detachment at the Ames Aeronautical Lab under the National Advisory Committee for Aeronautics. As soon as he is discharged, he plans to return to the Institute for graduate study.

Easterly, South Carolina was the setting for the wedding of the former Mary De Vane and Dumont Rush on the 16th of September. Their plans are to set up housekeeping in Boston, where Dumont is working as a research engineer on the Institute staff. - September 12 was the eventful day for the former Jane Pritchard and Vic Darnell, a junior grade lieutenant. The wedding took place in New Britain, Conn. Vic and his bride will be stationed in Philadelphia, where he is assigned to the Navy Yard. — We hear that Dick Foley is soon to marry Ruth Guillan, whose home is in Queens, Long Island. From the deep South, we have a newspaper clipping telling us that Marion Valleau and John Longwell are engaged.

I regret that this is all which has reached me this month. I am on the move, traveling very light, and very little mail has reached me. Next month, however, if you will turn to this part of The Review again, I shall have all kinds of gossip for you.—CLINTON C. KEMP, General Secretary, 15 Rokeby Place, Staten Island 10, N.Y.

Announcing ~

1946 ALUMNI DAY

Saturday, February 23, 1946

AFTERNOON · · · · · · · Class Day Activities — Walker Memorial EVENING · · · · · · Stein-on-the-Table Banquet — Hotel Statler



gear your drives to more efficient power transmission Every Condor V-Belt has these 8 Points of Balance engineered into it—e

8 Points of Balance

- 1. Wide margin of strength.
- 2. Minimum inelastic stretch.
- 3. Uniform flexibility.
- Maximum resistance to structural breakdown.
- 5. Smooth running.
- 6. Maximum traction.
- 7. High resistance to side wear.
- 8. Correct lateral reinforcement.

These 8 Points are correctly embodied in every Condor V-Belt. Other factors being equal, the useful life of a V-Belt is limited by excessive stretch. Every Condor V-Belt has these 8 Points of Balance engineered into it—every Condor V-Belt is designed to give you more efficient power transmission, greater production and added profit through longer service life. And every Condor V-Belt does just that.

Stout, tough pre-stretched Whipcords carry the load smoothly, and are the Strength Members that fortify the FLEXLASTICS in which they are embedded. The FLEXLASTICS dissipate the heat of internal friction and high-speed flexing while providing a cushioned, smooth-running V-Belt.

Condor V-Belts are only one of the many MANHATTAN Products in which FLEXLASTICS, with engineered and correctly placed Strength Members, deliver added service. There are Paranite-G.O.P. Oil-Proof V-Belts with the same scientific principle embodied in their construction, but with G.O.P. FLEXLASTICS throughout for service where oil or excessive temperatures exist. The Non-Spark Feature for guarding against danger of fire, explosion and hazards from static is restricted but will be ready for your post-war use.

Write now for Condor V-Belt Bulletin 6868 B.

Condor Belts are now made in the dark, war-time color. The term FLEXLASTICS is an exclusive MANHATTAN trade mark. Only MANHATTAN can make FLEXLASTICS.

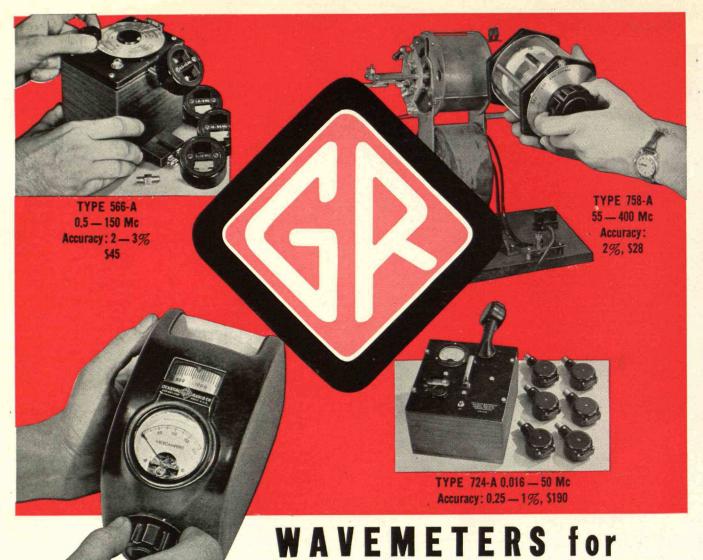




THE MANHATTAN RUBBER MFG. DIVISION

OF RAYBESTOS-MANHATTAN INC.

Executive Offices and Factories



NEW TYPE 1140-A 240-1200 Mc

This is the latest addition to the G-R wavemeter line, with a butterfly-type tuned circuit in which the capacitative and inductive elements are built integrally and tuning is effected by simultaneously varying both. The rectifier is a sensitive and rugged silicon crystal detector with a microammeter for resonance indication. The scale on the frequency indicator drum is 9 inches long. The tuning unit and indicating meter are mounted in a plastic housing which can be held conveniently in one hand. The instrument is accurate to 2% of the indicated frequency. Price: \$65

the Entire Communications Spectrum

• Simple, tuned-circuit wavemeters, either with or without resonance indicators, always will find wide application in the laboratory. Direct reading, compact, lightweight, rugged, easy to use, and with accuracy more than ample for many uses, these meters effectively supplement the highly accurate heterodyne frequency meter for many types of measurement.

Wavemeters will always be useful for approximate measurements of coil ranges, oscillator spans, preliminary lining up of transmitters, locating and naming harmonics in either the receiver or the transmitter, and for general experimental work.

For almost thirty years General Radio Company has pioneered in the design and manufacture of accurate wavemeters. General Radio's frequency measurement program, which has resulted in the finest primary standard of frequency to be obtained anywhere, has always had as a concurrent project the development of a line of wavemeters to cover as much of the useful radio spectrum as the art required.

The four instruments depicted cover the entire frequency range from 16 kc to 1,200 Mc. All of these meters are calibrated in our Calibration Laboratory in terms of the G-R Primary Standard of Frequency. All are built to the same standard of G-R quality as is found in the most precise frequency measuring assembly we manufacture.

G-R wavemeters are correctly designed, skillfully engineered, carefully manufactured and accurately calibrated. Write for detailed information.

GENERAL RADIO COMPANY

Cambridge 39, Massachusetts

90 West St., New York 6

920 S. Michigan Ave., Chicago 5

1000 N. Seward St., Los Angeles 38